

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TENNESSEE
GREENEVILLE

JOE PEPPERS and NATASHA PEPPERS,]	
as surviving natural parents and next of kin of]	
STEWART PEPPERS, deceased,]	
]	
v.]	No. 2:13-cv-0180
]	JUDGE GREER
WASHINGTON COUNTY, TENNESSEE;]	MAGISTRATE INMAN
SHERIFF ED GRAYBEAL, JR., individually]	JURY DEMAND
and in his official capacity; LIEUTENANT]	
JASON LOWE, in his individual and official]	
capacity; CORRECTIONS OFFICER MARTIN,]	
in his individual and official capacity;]	
CORRECTIONS OFFICER DRAPER, in his]	
individual and official capacity; CORRECTIONS]	
OFFICER CORNETT, in his individual and]	
official capacity; CORRECTIONS OFFICER]	
GARMIN, in his individual and official capacity;]	
and CORRECTIONS OFFICER RICHARDS,]	
in his individual and official capacity,]	
]	
Defendants.]	

AFFIDAVIT OF KAREN CLINE-PARHAMOVICH, D.O., D.A.B.P.

STATE OF TENNESSEE]

COUNTY OF WASHINGTON]

Karen Cline-Parhamovich, being duly sworn according to law, deposes and makes the following Affidavit of her own personal knowledge and would state and aver as follows:

1. My name is Karen Cline-Parhamovich. I am over eighteen years of age, and I am competent to make this Affidavit.
2. I am the Chief Medical Examiner for the State of Tennessee, and my office is located at the William L. Jenkins Forensic Center in Johnson City, Tennessee.

3. As the Chief Medical Examiner for the State of Tennessee, I am the custodian of records for autopsy reports performed in Tennessee, and my office maintains copies of those autopsy reports.

4. Autopsy reports are used to convey the findings of the autopsy and to provide information and opinions relating to the cause of death of the person examined and evaluated. The reports are prepared and finalized at or near the time of the opinions expressed in the reports by a person or persons with knowledge of the information and opinions contained in the reports.

5. Preparation of an autopsy report is a regular practice that is conducted following the performance of an autopsy, and the autopsy report is kept in the course of that regularly conducted activity by the Chief Medical Examiner's Office.

6. Attached to this Affidavit as Exhibit A is a true and accurate copy of the autopsy report relating to Stewart W. Peppers as prepared and compiled by Dawn R. Lajoie, M.D. and released on January 21, 2014.

AND FURTHER THE AFFIANT SAITH NOT.



KAREN CLINE-PARHAMOVICH



Sworn to and subscribed before me, a Notary Public, by Karen Cline-Parhamovich, on this 31st day of January, 2014.


NOTARY PUBLIC

My Commission Expires: 9-28-16

CERTIFICATE OF SERVICE

I hereby certify that on January 31, 2014, a copy of the foregoing Affidavit of Karen Cline-Parhamovich was filed electronically. Notice of this filing will be sent by operation of the Court's electronic filing system to all parties indicated on the electronic filing receipt. All other parties will be served by regular U.S. Mail. Parties may access this filing through the Court's electronic filing system.

s/ Jeffrey M. Ward

JEFFREY M. WARD, BPR # 016329

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QUILLEN
COLLEGE OF MEDICINE
EAST TENNESSEE STATE UNIVERSITY

Exhibit A

DIVISION OF FORENSIC PATHOLOGY • WILLIAM L. JENKINS FORENSIC CENTER • P.O. BOX 70425 • JOHNSON CITY, TN 37614-1704
(423) 439-8038 • FAX: (423) 439-8070

CASE NO.: FA-13-112
COUNTY: Washington

NAME OF DECEDENT: STEWART W. PEPPERS RACE: White SEX: Male AGE: 22

THE BODY WAS IDENTIFIED BY: Washington County Sheriff's Office and T.B.I.

HOME ADDRESS: 606 Swadley Road, Johnson City, TN

COUNTY MEDICAL EXAMINER: Vince Pinyard, M.D.
ADDRESS: 127 Chestnut Ridge Drive, Jonesborough, TN 37659

DISTRICT ATTORNEY GENERAL: Honorable Tony Clark
ADDRESS: P.O. Box 38, Jonesborough, TN 37659

PATHOLOGIC DIAGNOSES (please see Final Autopsy Report for full list of diagnoses):

- I. Excited Delirium associated with misuse of Nandrolone Decanoate, exogenous testosterone and acute cannabinoid:
 - A. Positive analysis for Excited Delirium, see consultation report:
 - i. Decreased numbers of dopamine transporters and dysregulation of dopamine signaling in the brain:
 1. Defective dopamine transporter regulation has been associated with excited delirium
 - ii. Significantly increased heat shock protein 70, a biomarker for hyperthermia at death:
 1. No body core temperature taken at or around the time of death
 2. Emergency medical personnel documented that the decedent's skin felt warm to touch and was flushed
 3. No available hospital laboratory studies at or around time of death
 - B. Markedly muscular habitus in a young adult male:
 - i. History of "body building"
 - ii. During the course of his confrontation with police and arrest preceding this incarceration, officers recovered personal effects, which included marijuana and a fluid-filled vial labeled as Nandrolone Decanoate
 - C. Intermittent combative, bizarre and destructive behavior for several days preceding death
 - D. Toxicological examination:
 - i. Toxicological examination of hospital admission blood
 1. Positive for cannabinoids, indicating acute influence at the time of death
 2. Negative for the detectable bath salts, stimulant designer drugs, and synthetic cannabinoids
 - ii. Postmortem toxicological examination of urine:
 1. Detected metabolites of Nandrolone
 2. Testosterone/epitestosterone ratio indicative of significant prior administration of exogenous testosterone

3. Toxicological analysis of fluid from the vial labeled "Nandrolone Decanoate", confirmed the presence of Nandrolone Decanoate
- E. Sudden unexpected death during restraint attempts at Washington County Detention Center
 1. Combative and aggressive behavior immediately preceding death necessitated restraint efforts by Washington County Detention Center Officers, including:
 - a. Physical restraint measures
 - b. Use of a Taser Electronic Control Device
 - c. Use of "Freeze +P" spray
 - i. Erythema of the laryngeal and tracheal mucosa without significant grossly or histologically discernible laryngeal edema
 - 1) Epithelial coagulative necrosis of the airways:
 - a) Not significant enough to be attributed as a cause of death
 - 2) Etiology unclear:
 - a) Gastric aspiration versus effects of "Freeze +P" spray
 - ii. Superficial skin sloughing (peeling), chest and anterior shoulders
 - 1) Etiology unclear, may be related to the effects of "Freeze +P" spray
 - d. Attempts to restrain into a "restraint chair"
 2. No significant trauma or pathology to which death may be attributed:
 - a. No skeletal or cartilaginous fractures
 - b. Multiple blunt force injuries:
 - i. Moderate extensive distribution of moderate skin contusions and abrasions over the head, torso and extremities including the hands
 - ii. Bilateral scleral hemorrhage, greater on the right
 - iii. Bilateral hemorrhage of the temporalis muscles
 - iv. Multifocal hemorrhage of the subgaleal and scalp tissues
 - v. Linear red abrasions of the bilateral wrists, probable handcuff abrasions; linear red abrasions and lacerations of the bilateral ankles, injury associated with shackles
 - vi. Geometrically shaped contusion to the left of the right ankle, probable secondary to restraint mechanism
 - vii. Focal mild tongue hemorrhage
 - viii. Multifocal subcutaneous and intramuscular mild-to-moderate hemorrhage
 - ix. Focal mild posterior superficial and deep muscular hemorrhage at the level of the intact atlanto-occipital joint
 3. Mild to moderate global hypoxic/ischemic encephalopathy
 4. Mild cerebral edema
 5. Contraction band necrosis, subendocardial consistent with terminal cardiac arrhythmia
 6. Moderate pulmonary edema

II. "Athlete's heart":

- A. Cardiomegaly 480 grams
- B. Biventricular hypertrophy and dilation

III. Tunneled proximal left anterior descending artery (LAD)

IV. Multifocal cardiac myofiber disarray

- A. Extent does not reach the threshold minimum for a diagnosis of Hypertrophic Cardiomyopathy (HCM)

CAUSE OF DEATH: Excited Delirium associated with misuse of Nandrolone Decanoate, exogenous testosterone and acute cannabinoid

NARRATIVE SUMMARY/OPINION: According to the investigation, this 22 year old male was witnessed to become unresponsive in restraint implemented due to combative, bizarre and destructive behavior while incarcerated at the Washington County Detention Center (WCDC). WCDC personnel initiated cardiopulmonary resuscitative measures and emergency medical personnel (EMS) were summoned. He was transported by EMS to Johnson City Medical Center (JCMC), where despite resuscitative efforts, he was pronounced deceased shortly after his arrival. There are no reports of overt suicidal ideation and no history of suicide attempts.

No body core temperature was taken at or around the time of death. No hospital laboratory tests were performed at JCMC on this aforementioned admission. Emergency medical personnel documented that the decedent's skin felt warm to the touch and was flushed.

During the course of his initial confrontation with police and arrest preceding this incarceration, officers recovered his personal effects, which included marijuana and a fluid-filled vial labeled as Nandrolone Decanoate (a synthetic anabolic steroid).

Reportedly, prior to becoming unresponsive while incarcerated, the decedent was significantly aggressive and combative, necessitating multiple efforts to subdue and restrain him by WCDC officers, including attempts to physically restrain him, the use of a Taser Electronic Control Device, the use of "Freeze +P" spray, and finally attempts to secure him into a "restraint chair". The decedent was seated in the chair when he became unresponsive. Mechanisms of the chair's restraint system include straps that overlie the shoulders and cross the chest before being buckled and tightened upon the occupant. It is reported that, due to the decedent's resistance, the straps could not be properly secured or tightened; indicating that mechanical asphyxiation due to impeded chest wall movement is unlikely in this case.

The decedent was an athletic male who had engaged in "body building". While being processed into the WCDC, the decedent admitted to "smoking" marijuana "nightly" and denied the use of steroids. He had no known significant chronic medical or psychiatric conditions and had no primary care physician.

Autopsy examination revealed (please see Final Autopsy Report for full list of diagnoses) no significant trauma or pathology to which death may be attributed; multiple blunt force injuries, including extensive distribution of moderate skin contusions and abrasions, linear red abrasions of the bilateral wrists, linear red abrasions and lacerations of the bilateral ankles, and focal mild posterior superficial and deep muscular hemorrhage at the level of the intact atlanto-occipital joint; "Athlete's heart" (enlarged heart); tunneled proximal left anterior descending artery (LAD, a blood vessel that supplies the heart with blood); multifocal cardiac myofiber (heart muscle cell) disarray, the extent of which did not reach the threshold minimum for a diagnosis of Hypertrophic Cardiomyopathy (HCM); and findings consistent with Excited Delirium, including neurochemical (dopamine) abnormalities within the brain and increased heat shock protein 70 (a biomarker for hyperthermia), per Consultant, Dr. Deborah Mash, University of Miami, Miller School of Medicine.

"Tunneling", or "myocardial bridging", of the LAD is a frequent incidental finding at autopsy examination and describes the condition wherein a portion of the blood vessel superficially courses within the heart muscle.

Excited Delirium is a syndrome associated with intervals of both calm and extremely agitated behavior precipitating sudden death during restraint. Dysregulation of the cerebral neurotransmitter, dopamine, has been associated with fatal cases of Excited Delirium.

Postmortem vitreous fluid analysis was negative for dehydration, hyperglycemia, ketones (acetone) and renal failure.

Toxicological examination of hospital admission blood detected cannabinoids, indicating that the decedent was under the influence of this drug at the time of his death, and was negative for the detectable bath salts, stimulant designer drugs, and synthetic cannabinoids. Postmortem toxicological examination of the urine detected metabolites of Nandrolone, indicating recent use of Nandrolone. Further analysis of the urine revealed a testosterone/epitestosterone ratio indicative of significant prior administration of testosterone. Toxicological analysis of the fluid from the vial labeled "Nandrolone Decanoate", which was recovered from the decedent's personal effects, confirmed the presence of Nandrolone Decanoate in the fluid. The manner of death is accident.

The purpose of this report is to provide a certified opinion to the County Medical Examiner and District Attorney General.

Date: 1/21/2014

Signature: _____


DAWN R. LAJOIE, M.D.

DRL:mt

William L. Jenkins Forensic Center
Box 70425, Johnson City, Tennessee 37614-1704

AUTOPSY PROTOCOL

AUTOPSY #: FA-13-112

CASE #: FA-13-112

NAME OF DECEDENT: STEWART W. PEPPERS RACE: White SEX: Male AGE: 22

DATE AND TIME OF AUTOPSY: Tuesday, April 30, 2013 at 8:30 a.m.

PATHOLOGIST: Dawn R. Lajoie, M.D.

DATE COMPLETED: 1/21/2014

FINAL AUTOPSY REPORT

PATHOLOGIC DIAGNOSES:

- I. Excited Delirium associated with misuse of Nandrolone Decanoate, exogenous testosterone and acute cannabinoid:
 - A. Positive analysis for Excited Delirium, see consultation report:
 - i. Decreased numbers of dopamine transporters and dysregulation of dopamine signaling in the brain:
 1. Defective dopamine transporter regulation has been associated with excited delirium
 - ii. Significantly increased heat shock protein 70, a biomarker for hyperthermia at death:
 1. No body core temperature taken at or around the time of death
 2. Emergency medical personnel documented that the decedent's skin felt warm to touch and was flushed
 3. No available hospital laboratory studies at or around time of death
 - B. Markedly muscular habitus in a young adult male:
 - i. History of "body building"
 - ii. During the course of his confrontation with police and arrest preceding this incarceration, officers recovered personal effects, which included marijuana and a fluid-filled vial labeled as Nandrolone Decanoate
 - C. Intermittent combative, bizarre and destructive behavior for several days preceding death
 - D. Toxicological examination:
 - i. Toxicological examination of hospital admission blood
 1. Positive for cannabinoids, indicating acute influence at the time of death
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 - ii. Postmortem toxicological examination of urine:
 1. Detected metabolites of Nandrolone
 2. Testosterone/epitestosterone ratio indicative of significant prior administration of exogenous testosterone
 3. Toxicological analysis of fluid from the vial labeled "Nandrolone Decanoate", confirmed the presence of Nandrolone Decanoate
 - E. Sudden unexpected death during restraint attempts at Washington County Detention Center

1. Combative and aggressive behavior immediately preceding death necessitated restraint efforts by Washington County Detention Center Officers, including:
 - a. Physical restraint measures
 - b. Use of a Taser Electronic Control Device
 - c. Use of "Freeze +P" spray
 - i. Erythema of the laryngeal and tracheal mucosa without significant grossly or histologically discernible laryngeal edema
 - 1) Epithelial coagulative necrosis of the airways:
 - a) Not significant enough to be attributed as a cause of death
 - 2) Etiology unclear:
 - a) Gastric aspiration versus effects of "Freeze +P" spray
 - ii. Superficial skin sloughing (peeling), chest and anterior shoulders
 - 1) Etiology unclear, may be related to the effects of "Freeze +P" spray
 - d. Attempts to restrain into a "restraint chair"
2. No significant trauma or pathology to which death may be attributed:
 - a. No skeletal or cartilaginous fractures
 - b. Multiple blunt force injuries:
 - i. Moderate extensive distribution of moderate skin contusions and abrasions over the head, torso and extremities including the hands
 - ii. Bilateral scleral hemorrhage, greater on the right
 - iii. Bilateral hemorrhage of the temporalis muscles
 - iv. Multifocal hemorrhage of the subgaleal and scalp tissues
 - v. Linear red abrasions of the bilateral wrists, probable handcuff abrasions Linear red abrasions and lacerations of the bilateral ankles, injury associated with shackles
 - vi. Geometrically shaped contusion to the left right ankle, probable secondary to restraint mechanism
 - vii. Focal mild tongue hemorrhage
 - viii. Multifocal subcutaneous and intramuscular mild-to-moderate hemorrhage
 - ix. Focal mild posterior superficial and deep muscular hemorrhage at the level of the intact atlantooccipital joint
3. Mild to moderate global hypoxic/ischemic encephalopathy
4. Mild cerebral edema
5. Contraction band necrosis, subendocardial consistent with terminal cardiac arrhythmia
6. Moderate pulmonary edema

II. "Athlete's heart":

- A. Cardiomegaly 480 grams
- B. Biventricular hypertrophy and dilation

III. Tunneled proximal left anterior descending artery (LAD)

FA-13-112

PATHOLOGIC DIAGNOSES (continued)

Page 3 of 13

IV. Multifocal cardiac myofiber disarray

A. Extent does not reach the threshold minimum for a diagnosis of Hypertrophic
Cardiomyopathy (HCM)

V. Mild scarring of the left kidney

VI. Mild pelvic and bilateral inguinal adenopathy

DRL:mt

An autopsy examination is performed on the body received identified as Stewart W. Peppers at the William L. Jenkins Forensic Center, State of Tennessee, on Tuesday the 30th day of April 2013, beginning at 8:30 a.m.

The body is received within a sealed body bag with an attached identification tag bearing the decedent's name.

EXTERNAL EXAMINATION

Injuries are described below under "Evidence of Injury".

The body is that of a well-developed muscular, well-nourished adult white male who weighs 232 pounds (Body Mass Index: 30.6 lb/in²), is 73 inches in length and appears compatible with the reported age of 22 years.

Encircling the left great toe is an identification tag bearing the decedent's name. Encircling the right wrist is an identification band bearing the decedent's name.

The body is cold (refrigerated). Rigor mortis is fully developed. Blanchable purple and pink livor extends over the posterior surfaces of the body except in areas exposed to pressure.

The torso, external genital region and extremities are shaved (stubble) and the chest and abdomen have multiple striae.

The scalp hair is black and very short. The irides are brown-hazel. The corneas are translucent. The nose and ears are normally formed. The decedent wears mustache and beard stubble. The teeth are natural and in good repair.

The neck and thorax are well-developed and symmetrical. The abdomen is flat. The anus is atraumatic and free of lesions. The spine is normally formed.

The upper and lower extremities are well-developed and symmetrical without absence of digits.

The atraumatic external genitalia are those of a normal adult male.

IDENTIFYING MARKS AND SCARS:

The chest and abdomen have multiple striae.

EVIDENCE OF MEDICAL INTERVENTION:

Three (3) electrocardiograph pads are on the bilateral upper chest and left abdomen. Defibrillator pads are on the upper right and lower left chest. Multiple puncture defects are on the right groin. An intravenous catheter is inserted in the ventral right forearm. Intravenous catheters are inserted in the bilateral antecubital fossae and have attached tubing and fluid-filled bags labeled "0.9% Sodium Chloride". The right index finger has an affixed external probe. An airway tube is inserted via the oropharynx and the tip is within the trachea.

EVIDENCE OF INJURY**INJURY INDETERMINANT FOR BLUNT FORCE INJURY VERSUS TASER ELECTRONIC CONTROL DEVICE RELATED INJURY:**

The lower right abdomen has two (2) dark red skin defects (grossly resembling abrasions), 1/8 to 3/8 inch in greatest dimension, and a 1 inch very pale green contusion.

The lower left abdomen and proximal anterior right thigh have a 4-1/2 x 2-1/4 inch area of multiple red and red-purple contusions, 1/4 to 1-3/4 inch in greatest dimension, and multiple red skin defects (grossly resembling abrasions), over a 3 x 1 inch area, up to 1/2 inch in greatest dimension.

The anterior left shoulder has a 1/2 inch red skin defect (grossly resembling abrasion). The superoposterior left shoulder has 2 red skin defects (grossly resembling abrasions), up to 3/4 inch in greatest dimension, and a 2 x 1 inch pale red contusion.

The anterior right shoulder has multiple red skin defects (grossly resembling abrasions), up to 3/16 inch in greatest dimension.

Two red skin defects (grossly resembling abrasions), up to 1/4 inch in greatest dimension, are on the upper right chest.

INJURY OF INDETERMINANT ETIOLOGY, POSSIBLY RELATED TO THE EFFECTS OF "FREEZE +P" SPRAY:

The skin of the chest and predominately anterior shoulders has mild superficial sloughing (peeling). The laryngeal and tracheal mucosa is erythematous. There is no grossly discernible laryngeal edema. A 3/4 x 1/4 inch focus of tan-brown discoloration and mild irregularity is on the left laryngeal mucosa.

BLUNT FORCE INJURIES:**HEAD AND NECK**

The sclera of the left eye has mild hemorrhage. The sclera of the right eye has moderate hemorrhage. The right periorbital skin has a 2 x 1-1/2 inch area of patchy purple and red contusion, a 1/4 inch purple contusion and a 3/4 x 1/4 inch pale green contusion. The left periorbital skin has a 2-1/2 x 3/4 inch dark red contusion and a 1/4 inch red abrasion. The nasal bridge has a 1/4 inch patchy red abrasion, a 1/16 inch red abrasion and a 1/8 inch red abrasion. The right jaw has a 1/8 inch red abrasion. The chin has a 1 x 1/4 inch area of multiple red abrasions, up to 3/8 inch in greatest dimension.

The right forehead has a 3/4 x 1/4 inch pale purple contusion and a 2 x 1 inch area of patchy red abrasion. The left forehead has multiple pale red contusions, 7/8 to 1-1/2 inch in greatest dimension. A 1/4 inch red contusion is on the superior helix of the left ear.

The superior scalp has a 3/4 x 1/16 inch red abrasion, a 1/2 x 1/8 inch red abrasion, a 1/8 inch red abrasion, a 1 inch red contusion, a 3/8 x 1/8 inch red abrasion and a 1 x 1/4 inch purple contusion with central indentation.

The left posterior neck has a 1/4 inch dark black-red abrasion. A 1/4 inch red abrasion is on the posterior right neck.

The bones of the face and skull have no fractures.

The left temporalis muscle and subgaleal tissue have mild-to-moderate hemorrhage. Moderate hemorrhage is within the right temporalis muscle and the right frontal and right temporal scalp. Patchy moderate hemorrhage is within the posterior right scalp.

In situ examination of the anterior neck reveals no hemorrhage within the strap muscles of the neck. The cartilaginous and bony structures of the neck are intact. A posterior neck dissection reveals focal mild hemorrhage and focal deep muscular hemorrhage at the level of the atlanto-occipital joint, which is intact.

The right anteroinferior tongue has focal mild hemorrhage.

TORSO:

The upper right abdomen has a 2 inch area of multiple red and red-brown contusions up to 3/4 inch in greatest dimension.

The upper left back has two (2) red abrasions up to 1/2 inch in greatest dimension. The mid left back has a 3/16 inch purple contusion. The mid right back has a 1/2 inch linear red abrasion. The lower left back has two (2) red abrasions up to 1/4 inch in greatest dimension. The upper left buttock has a 3/8 inch purple contusion. The central lower back has a 2 x 1 inch area of multiple patchy pale purple contusions and a 1/2 inch pale purple contusion with central red abrasion. A 3-1/2 x 2 inch area of multiple red abrasions, up to 3/8 inch in greatest dimension, is on the upper right back and posterior right shoulder.

Multiple areas of patchy mild-to-moderate subcutaneous and muscular hemorrhage are on the lower left chest, abdomen, bilateral upper back, central left back and lower right back. The anterolateral inferior left chest has focal mild hemorrhage within the soft tissue. There are no grossly discernible rib fractures.

UPPER EXTREMITIES:

The upper right arm has a 6 x 5 inch area of multiple purple and red contusions, up to 3/4 inch in greatest dimension, a 6 x 3-1/2 inch red and purple-red contusion, and a 2-1/2 x 3/4 inch red contusion with associated patchy red abrasion. The proximal ventromedial right forearm has a 2 x 3/4 inch red contusion. A 1-3/4 x 3/4 inch red contusion is on the ventrolateral right forearm. The proximal posterior upper right arm has a 1/4 inch red-purple excoriation. Two (2) punctate and up to 1/16 inch red abrasions are on the dorsal right forearm.

The right antecubital fossa, posterior upper right arm and dorsal right forearm and dorsal right wrist have patchy mild-to-moderate subcutaneous and muscular hemorrhage.

A red-purple contusion, which measures 8-1/2 x 4 inches, involves the dorsal right hand and proximal dorsal right fingers. At the base of the right thumb on the dorsal web of the right hand is a 1 inch red contusion. A 1-1/6 inch pink abrasion is at the dorsal base of the right thumb. A patchy red-purple contusion, which measures 4 x 3-1/2 inches, involves the ventral palmar surface of the right hand, right thumb and proximal right fingers.

The ventral right wrist has a 3/4 inch purple contusion. The right wrist has multiple linear, roughly parallel and nearly circumferential, red abrasions.

A 3/4 inch pale purple-red contusion is on the anteromedial upper left arm. The medial left elbow has a 1 inch red contusion. The ventral left forearm has multiple pale red and red contusions, 1/2 to 1-1/4 inch in greatest dimension. A 3/4 inch red contusion is on the posteromedial left elbow region.

The left antecubital fossa and proximal ventral left forearm, ventral left wrist and posterior left arm have multiple foci of mild-to-moderate subcutaneous and muscular hemorrhage.

Multiple pale purple contusions, up to 3/4 inch in greatest dimension, are on the knuckles of the dorsal left middle, left ring, and left 5th fingers. A 3 x 2-1/4 inch red contusion involves the dorsal left hand at the base of the left middle, left ring and left 5th fingers. Multiple superficial lacerations, up to 1/4 inch in greatest dimension, are on the knuckles of the dorsal left hand and the proximal interphalangeal knuckle of the dorsal left index finger and the distal dorsal left middle and index fingers.

The left wrist has multiple linear, roughly parallel and nearly circumferential, red abrasions. The medial left wrist has a 3 x 2 inch red contusion. The lateral left wrist has a 3 x 1-1/2 inch red contusion. A 1/4 inch red abrasion is on the ventrolateral left wrist. Multiple red abrasions, up to 3/16 inch in greatest dimension, are on the dorsolateral left wrist.

LOWER EXTREMITIES:

The anterior right knee has multiple patchy dark red abrasions, up to 1-1/8 inch in greatest dimension, and a 3/4 inch dark red abrasion. The distal right shin has a 1/2 inch red contusion. A nearly circumferential up to 3/4 inch wide band-like distribution of multiple linear superficial and deep abrasions and lacerations is on the right ankle. The medial right ankle has a 1-1/4 inch red contusion and a 2-1/4 x 1-3/4 inch pale purple-green contusion. A 1/4 inch pale blue contusion is on the right calf.

The lateral right ankle has a 1/2 inch linear red abrasion and a roughly triangular arrangement of linear gray-blue contusions. A 7-1/4 x 4 inch purple-red contusion involves the lateral right ankle and lateral right foot.

The dorsal right foot has two (2) red contusions, 1/4 to 1-1/4 inch in greatest dimension and a 1/2 inch red abrasion. A 3-1/4 x 1-1/2 inch red-purple contusion is on the dorsal right foot at the base of the right 2nd through 5th toes.

A 6-1/2 x 3 inch area of purple-red contusion involves the medial right foot. The plantar surface of the right great toe has a 3/16 inch red abrasion. A 3 x 2 inch red-purple contusion involves the medial plantar surface of the right foot. A 3/4 x 1/4 inch superficial laceration is on the plantar surface of the left foot at the base of the great toe.

The anterior right knee, proximal lateral right shin and right calf and right ankle have multiple foci of mild-to-moderate subcutaneous and muscular hemorrhage.

The anterior left knee has a 1 x 5/8 inch dark red-black abrasion, a 2 x 1-1/2 inch dark red-black abrasion, a 1 inch area of multiple punctate red-black abrasions, and multiple linear red abrasions up to 3/4 inch long. The left shin has multiple red contusions, up to 1 inch in greatest dimension, a 1/16 inch scab, and multiple red abrasions, 5/8 to 1-1/2 inch in greatest dimension.

The left ankle has a nearly circumferential up to 7/8 inch wide band-like distribution of multiple linear superficial and deep abrasions and lacerations. The medial left ankle has a 1/2 inch red contusion, and patchy gray discoloration and contusion. A 2-1/2 x 1/8 inch superficial laceration is on the lateral left

heel. The posterolateral left ankle has a 1/2 inch dark red abrasion and a 3/8 inch red abrasion. The lateral left ankle has a 1/4 inch red abrasion and a 1 inch red contusion.

A 1/4 inch red abrasion is on the dorsal left foot at the base of the great toe. The distal left great toe has a 1/4 inch laceration. The left calf has a 1/4 inch pale blue contusion.

The medial left shin, left ankle, posterior left thigh and left calf have multiple foci of mild-to-moderate subcutaneous and muscular hemorrhage.

INTERNAL EXAMINATION

Injuries are described above under "Evidence of Injury".

BODY CAVITIES

No abnormal collections of fluid are in any of the body cavities. All body organs are in normal and anatomic position. The serous surfaces are smooth and glistening.

HEAD

The brain weighs 1360 grams. The cerebral hemispheres are symmetrical. The structures at the base of the brain, including the cranial nerves and blood vessels, are free of abnormality. The dura mater and falx cerebri are intact and not adherent to the brain. The dura mater of the inferior left occipital cortex has a 0.5 cm red discoloration. There is no epidural, subdural or subarachnoid hemorrhage. The remaining portion of brain is fixed prior to further examination. Sections through the cerebral cortex, subcortical white matter and deep parenchyma reveal no lesions. The cerebral ventricles are of normal caliber. Sections through the brainstem and cerebellum reveal no lesions.

Consultation to determine risk factors associated with Excited Delirium is performed by Dr. Deborah Mash, University of Miami, Miller School of Medicine: Positive findings include increased heat shock protein 70 (a biomarker for hyperthermia) and decreased numbers of dopamine transporters.

NECK

The hyoid bone and larynx are intact.

CARDIOVASCULAR SYSTEM

The heart weighs 480 grams. The aorta has no significant atherosclerosis. Its major branches arise normally and follow the usual course. The orifices of the major aortic vascular branches are patent. The vena cava and its major tributaries are patent and return to the heart in the usual distribution and are unremarkable.

Cardiovascular pathology consultation is performed by Dr. Charles Ganote, East Tennessee State University, Department of Pathology, and renders the following:

The heart is enlarged having a broadly normal conical shape, with the left ventricle forming the apex, minimal epicardial fat and smooth shiny epicardium, with an irregular triangular 1 cm patch of thickening at the infundibular apex. The right atrium has sharp margins, indicating absence of dilation.

The aorta and pulmonary arteries are similar in size and measure 1.8 cm. The heart is relatively normally proportioned with an atrium: ventricle ratio of 5 cm:10 cm (normal 1:2) and a left to right ventricle ratio of 7:5 cm (normal 2: 1; Forensic population average ratio $1.7: 1 \pm 0.4$), indicating mild right ventricle dilation.

The coronary arteries are sectioned in situ. Coronary artery distribution is right dominant. The arteries are without tortuosity or atherosclerosis. The proximal left anterior descending artery (LAD) gives off an early, superficial diagonal, just before entering a 3 cm long 2-3 mm deep muscular tunnel, then emerging to the surface and continuing around the apex.

A long axis section is made to expose a 3.8 mm thick walled but otherwise normal 3X4 cm left atrium and mitral valve. The left ventricle is dilated with a 4 cm mid-cavity diameter (normal 2-2.5 cm; population average 3.3 ± 0.9 cm). The basal IV septum thickness is 1.3 cm. The lateral LV wall is 1.4 cm thick, while the mid-septum and posterior basal walls are 1.5 cm thick. The right ventricle has an average 4 mm wall thickness (normal 3-4 mm). The inter-atrial septum is intact and the tricuspid valve is normal. The myocardium is uniformly a brown-tan color without scars or hemorrhages.

PROVISIONAL GROSS DIAGNOSES:

Cardiomegaly 480 grams

Biventricular hypertrophy and dilation; (c/w "athlete's heart")

Tunneled proximal left anterior descending artery (3 cm long X 2-3 mm deep)

MICROSCOPIC: All sections of myocardium had diffuse hypertrophy of cardiomyocytes of moderate degree. Neither infarctions nor myocarditis were present. There was hyperacute contraction band necrosis of immediately subendocardial cardiomyocytes, a feature that is non-specific but often is associated with terminal arrhythmia.

The anterior septum near the tunneled LAD contained several microscopic foci of cardiomyocyte myofiber disarray. While myofiber disarray is common at branching of small intramural arteries, such foci are not usually associated with a striking degree of cardiomyocyte enlargement. The foci in this case occurred separate from artery branches and contained strikingly enlarged cardiomyocytes and both myofiber disarray and intracellular myofibril disarray.

DISCUSSION: Heart weights for an average normal man...are 371 grams calculated from the height and 375 grams from the weight. Given the age and history of weight training, the cardiomegaly seems consistent with an athlete's heart...

Although trained athletes are known to develop spontaneous reversible tachyarrhythmias, in the present case, which is presumed to have acute stress added to pre-existing cardiac hypertrophy, one cannot exclude a physiologically significant "long and deep" myocardial tunnel as a factor contributing to a lethal arrhythmia.

Morphologic criteria for diagnosis of a genetic cardiomyopathy were not observed. Although there were several foci of interstitial myofiber disarray, accepted criteria

for diagnosis of hypertrophic cardiomyopathy (HCM) [sic: include] degree involvement of at least 5% of the IV septum, a criterion not met in this case. The pathophysiological significance of either the tunneled LAD or the small foci of hypertrophic myofiber disarray are uncertain.

FINAL DIAGNOSES:

Cardiomegaly 480 grams
Biventricular hypertrophy and dilation; (c/w "athlete's heart")
Tunneled proximal left anterior descending artery (3cm long X 2-3 mm deep)
Multifocal myofiber disarray
Contraction band necrosis, subendocardial

RESPIRATORY SYSTEM

The right and left lungs weigh 820 and 810 grams, respectively. The upper and lower airways are unobstructed. The pleural surfaces are smooth, glistening and unremarkable. The pulmonary parenchyma is red-purple and the cut surfaces exude moderate amounts of blood and frothy fluid. The pulmonary arteries are normally developed and without thromboemboli and atheromas. There is no saddle embolus on in situ examination of the pulmonary trunk.

LIVER AND BILIARY SYSTEM

The liver weighs 1450 grams. The hepatic capsule is smooth, glistening and intact, covering red-brown parenchyma. The gallbladder contains watery bile without stones. The extrahepatic biliary tree is patent.

ALIMENTARY TRACT

The esophagus is lined by gray-white smooth mucosa. The gastric mucosa is mildly autolyzed and the lumen contains 320 mL of brown liquid and partially digested food. The serosa of the bowel is smooth and glistening. There are no lesions of the duodenal or colorectal mucosa. The anus and sigmoid colon contain soft brown stool and no foreign bodies. The appendix is present. The pancreas has a normal tan lobulated appearance.

GENITOURINARY TRACT

The right and left kidneys weigh 260 and 180 grams, respectively. The right renal capsule is smooth, thin and semitransparent and strip with ease from the underlying smooth red-brown firm cortical surfaces. The left renal capsule strips with mild difficulty from the underlying mildly scarred red-brown firm cortical surfaces. The cortices are of normal thickness and delineated from the medullary pyramids. The calyces, pelves and ureters are non-dilated and free of stones. The urinary bladder contains 40 mL of clear yellow urine; the mucosa is gray-tan and smooth.

The bilaterally descended testes are of normal size and consistency. The prostate is not enlarged.

RETICULOENDOTHELIAL SYSTEM

The spleen weighs 260 grams and has a smooth intact capsule covering red-purple mildly firm parenchyma. The splenic white pulp is grossly discernible. The bone marrow (rib) is red-purple. The bilateral inguinal and periaortic pelvic lymph nodes are mildly enlarged.

ENDOCRINE SYSTEM

The pituitary gland is of normal size. The thyroid gland is of normal position, size and texture. The adrenal glands have normal cut surfaces with yellow cortex and gray medulla.

MUSCULOSKELETAL SYSTEM

The bony framework, supporting musculature and soft tissues, is not unusual. The cervical spinal column is stable on internal palpation.

OTHER LABORATORY TESTS

Postmortem vitreous fluid analysis was negative for dehydration, hyperglycemia, ketones (acetone) and renal failure.

MICROSCOPIC EXAMINATION**SUMMARY OF SECTIONS:**

1. RIGHT LUNG
2. RIGHT ADRENAL GLAND, RIGHT INGUINAL LYMPH NODE
3. LEFT ADRENAL GLAND, LEFT INGUINAL LYMPH NODE
4. LEFT TESTICLE
5. RIGHT TESTICLE, RIGHT EPIDIDYMIS
6. RIGHT KIDNEY, PITUITARY GLAND
7. SPLEEN, LIVER
8. LEFT LUNG
9. THORACIC VERTEBRA
10. THYROID GLAND
11. PANCREAS
- 12 - 14. SMALLER AIRWAYS, BILATERAL DISTAL BRONCHI AND ADJACENT LUNG TISSUE
- 15 - 16. TRACHEA NEAR CARINA
17. EPIGLOTTIS AND ADJACENT SOFT TISSUE
- 18 - 19. LARYNX WITH FOCAL PATCHY BROWN DISCOLORATION
20. RIGHT LOWER QUADRANT ABDOMINAL SKIN DEFECTS
21. LEFT LATERAL CHEST CONTUSION/ SKIN DEFECTS
22. SUPERIOR AND ANTERIOR LEFT SHOULDER SKIN DEFECTS
23. RIGHT SHOULDER SKIN DEFECTS
24. RIGHT CHEST SKIN DEFECTS
25. FOCAL RED DISCOLORATION OF INTERNAL DURA MATER APPROXIMATING THE INFERIOR LEFT OCCIPITAL CORTEX
26. MIDBRAIN
27. CEREBELLUM/DENTATE
28. PONS
29. MEDULLA, FRONTAL CORTEX
30. HIPPOCAMPUS, BASAL GANGLIA
31. CAUDATE, CORPUS CALLOSUM, CINGULATE
32. BASAL GANGLIA
20. RIGHT LOWER QUADRANT ABDOMINAL SKIN DEFECTS
21. LEFT LATERAL CHEST SKIN CONTUSION/DEFECT
22. SUPERIOR LEFT SHOULDER ROUGHLY CIRCULAR SKIN DEFECT AND ANTERIOR LEFT SHOULDER SKIN DEFECT

- 23. RIGHT SHOULDER SKIN DEFECT
- 24. RIGHT CHEST SKIN DEFECT

CARDIAC HISTOLOGICAL SECTIONS LABELED AS FOLLOWS (CARDIOPATHOLOGY CONSULTATION): AVN, AV-IVS, LCX, PMPM, LAD, RVPM, RCA, RX, ALPM

LAD: Mild atherosclerotic change

RCA, LCX: Minimal atherosclerotic change

NOTE: For remaining microscopic summary of the cardiac histological sections, please see "Cardiovascular pathology consultation" above under "Cardiovascular System".

ADRENAL GLANDS: Mild autolysis and no readily discernible significant histopathology

INGUINAL LYMPH NODES: Fatty infiltration and autolysis; no readily discernible significant histopathology

RIGHT KIDNEY, PITUITARY GLAND: Mild autolysis and no readily discernible significant histopathology

SPLEEN: Mild autolysis and no readily discernible significant histopathology

LIVER: No significant histopathology

LEFT LUNG: Gastric aspiration; clusters of basophilic bacterial cocci; mild collections of intra-alveolar macrophages with dusky brown cytoplasm; autolysis

THORACIC VERTEBRA: No significant histopathology

THYROID GLAND: Mild autolysis and no significant histopathology

PANCREAS: Histological details obscured by autolysis

RIGHT LOWER QUADRANT ABDOMINAL SKIN DEFECTS: Focal epidermal increased eosinophilia and mild nuclear elongation with underlying dermal homogenization

LEFT LATERAL CHEST CONTUSION/ SKIN DEFECTS: Focal epidermal increased eosinophilia; mild nuclear elongation; focal dermal homogenization

SUPERIOR AND ANTERIOR LEFT SHOULDER SKIN DEFECTS: Intraepidermal separation; patchy parakeratosis

RIGHT SHOULDER SKIN DEFECTS: Focally thinned stratum corneum and Intraepidermal separation; focal dermal and epidermal homogenization; focal mild epidermal nuclear elongation

RIGHT CHEST SKIN DEFECTS: Focal mild epidermal increased eosinophilia; patchy mild parakeratosis

FOCAL RED DISCOLORATION OF INTERNAL DURA MATER APPROXIMATING THE INFERIOR LEFT OCCIPITAL CORTEX: Vascular congestion; mild edema; no focal lesion

NOTE: The following histological sections and corresponding gross autopsy photographs, as well as the circumstances of the case were reviewed with Dr. William McCormick, Neuropathologist and Forensic Pathologist:

MIDBRAIN: Mild acute eosinophilic neuronal necrosis

CEREBELLUM/DENTATE: Irregular patchy loss of Purkinje cells (chronic, unknown etiology), occasional acute eosinophilic necrosis of Purkinje cells (acute on chronic); no Bergman gliosis

HIPPOCAMPUS, BASAL GANGLIA: Mild irregular eosinophilic necrosis/ischemic changes of neurons without true sector necrosis; no gliosis; perineural and perivascular edema

CAUDATE, CORPUS CALLOSUM, CINGULATE, BASAL GANGLIA,
PONS, MEDULLA, FRONTAL CORTEX

NOTE: Mild edema in all sections of brain, brainstem and cerebellum; Mild to moderate hypoxic/ischemic changes/encephalopathy; no evidence of infection or primary demyelination, hemorrhage, infarction or inflammation

RIGHT LUNG: Gastric aspiration; clusters of basophilic bacterial cocci; mild collections of intra-alveolar macrophages with dusky brown cytoplasm; autolysis; no significant inflammation

SMALLER AIRWAYS, BILATERAL DISTAL BRONCHI AND
ADJACENT LUNG TISSUE: Epithelial coagulative necrosis; increased mucus production; Gastric aspiration; clusters of basophilic bacterial cocci; mild collections of intra-alveolar macrophages with dusky brown cytoplasm; autolysis; no significant inflammation

TRACHEA NEAR CARINA: Diffuse coagulative type necrosis of epithelium; dilation and congestion of submucosal/intramural vessels without an inflammatory response; hyalinization and thickening of basement membrane; minimal edema; no giant cells or inclusion bodies

EPIGLOTTIS AND ADJACENT SOFT TISSUE: Submucosal chronic inflammation (lymphocytes and plasma cells)

LARYNX WITH FOCAL PATCHY BROWN DISCOLORATION: Acute diffuse coagulative necrosis of the epithelium; epithelial desquamation with hyalinization of the basement membrane; intraluminal necrotic and mucoid debris; multiple skeletal muscle present without evidence of rhabdomyolysis

TESTICLES, RIGHT EPIDIDYMIS: No significant decrease in spermatogenesis; no atrophy; no interstitial fibrosis

DRL/mt



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DOD: 04/29/13 WASHINGTON CO
DOA: 04/30/13

Body Bag Tag:

Name: Peppers, Stewart

Sealed By: Sanders

Date: 04/30/13

Height 73 in

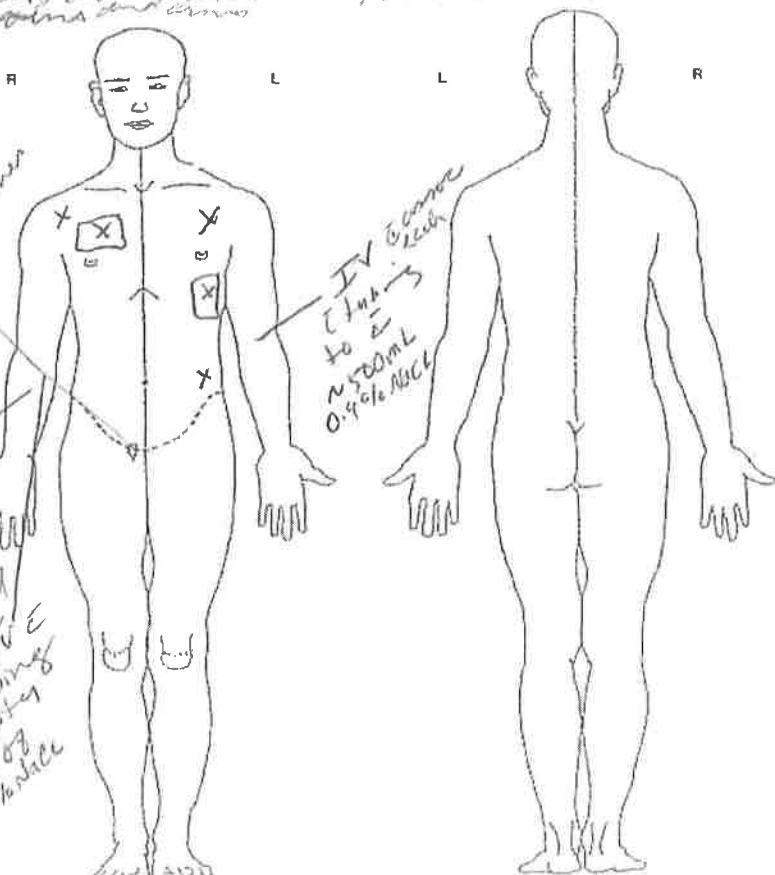
Weight 232 lbs

ID Band: Right ☐ Left ☒ quest for tag & name R wrist band

EXTERNAL EXAMINATION

Temperature	Warm <input type="checkbox"/>	Cool <input type="checkbox"/>	Cold <input checked="" type="checkbox"/>
Rigor Mortis	Jaw: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Small Muscles (eyelids, fingers): Yes <input type="checkbox"/> No <input type="checkbox"/>	Large Muscles (extremities): Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Livor Mortis	Fixed <input type="checkbox"/>	Blanchable <input checked="" type="checkbox"/>	Minimally evident & Easily Blanchable <input type="checkbox"/>
Posterior dependent areas: <input checked="" type="checkbox"/> Anterior <input type="checkbox"/> Other areas: <input type="checkbox"/>			
Decomposition: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Evidence of: <input type="checkbox"/>			
Previously Embalmed: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Evidence of: <input type="checkbox"/>			
Organ/Tissue Donation Procurement: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Evidence of: <input type="checkbox"/>			
Hair:	Color: <u>black</u>	Length: <u>very short</u>	Straight <input type="checkbox"/> Wavy <input type="checkbox"/> Curly <input type="checkbox"/>
Eyes:	Color: <u>brown - hazel</u>	Cornea: translucent <input checked="" type="checkbox"/> Clouded <input type="checkbox"/>	Sclera and Conjunctive: unremarkable <input type="checkbox"/> congested <input type="checkbox"/>
Nose	Unremarkable <input type="checkbox"/>	Other: <u>See diagram</u>	
Ears:	Unremarkable <input type="checkbox"/>	Other: <u>See diagram</u>	
Mustache:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Beard/Stubble: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Color: <input type="checkbox"/>
Teeth:	Natural <input type="checkbox"/> Irregularly Absent <input type="checkbox"/> Edentulous <input type="checkbox"/>	Repair/condition: None <input type="checkbox"/> Good <input checked="" type="checkbox"/> Adequate <input type="checkbox"/> Poor <input type="checkbox"/>	
Dentures in place:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Neck:	Unremarkable <input type="checkbox"/> Other: <u>not really on chest, short</u>		
Thorax:	Well Developed & Symmetrical <input checked="" type="checkbox"/> Increased A/P diameter <input type="checkbox"/> Other: <u>unremarkable</u>		
Abdomen:	Flat <input type="checkbox"/> Protuberant <input type="checkbox"/> Obese <input type="checkbox"/>	Anus & Back: Unremarkable <input checked="" type="checkbox"/> Hemorrhoids <input type="checkbox"/> No Trauma <input checked="" type="checkbox"/>	
Male Genitalia	Testes descended Right <input type="checkbox"/> Left <input checked="" type="checkbox"/> No Trauma <input checked="" type="checkbox"/>		
Female Genitalia	Normal adult female <input type="checkbox"/> No Trauma <input type="checkbox"/>	Breasts well developed <input type="checkbox"/> w/out masses <input type="checkbox"/> No Trauma <input checked="" type="checkbox"/>	
Upper and Lower Extremities:	Well Developed and Symmetrical Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	All Digits Present and Normal Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Identifying Marks and Scars: None Apparent <input type="checkbox"/>			

mix chest and abd 5' 11" ; showed back, arms to 60



EKG patch (X) Surgical Scars (SS)

Scars (S) Tattoos (T)

Evidence of Medical Intervention

ET/Combi Tube ☒ ECG Patches # 1
NG/OG Tube ☐ Foley ☐
Curved Plastic Airway ☐
Defibrillator/Pacer Pads ☐

IV's/NP's

Subclavian: Right ☐ Left ☐
Antecubital: Right ☐ Left ☐
Forearm: Right ☐ Left ☐
Wrist: Right ☐ Left ☐
Inguinal: Right ☐ Left ☐
Hand: Right ☐ Left ☐
Pulse Oximeter ☐
Intracranial Pressure Catheter ☐
Other: ☐

X-rays:

None ☒ Head ☐
Chest ☐ Abdomen ☐
Total Body ☐

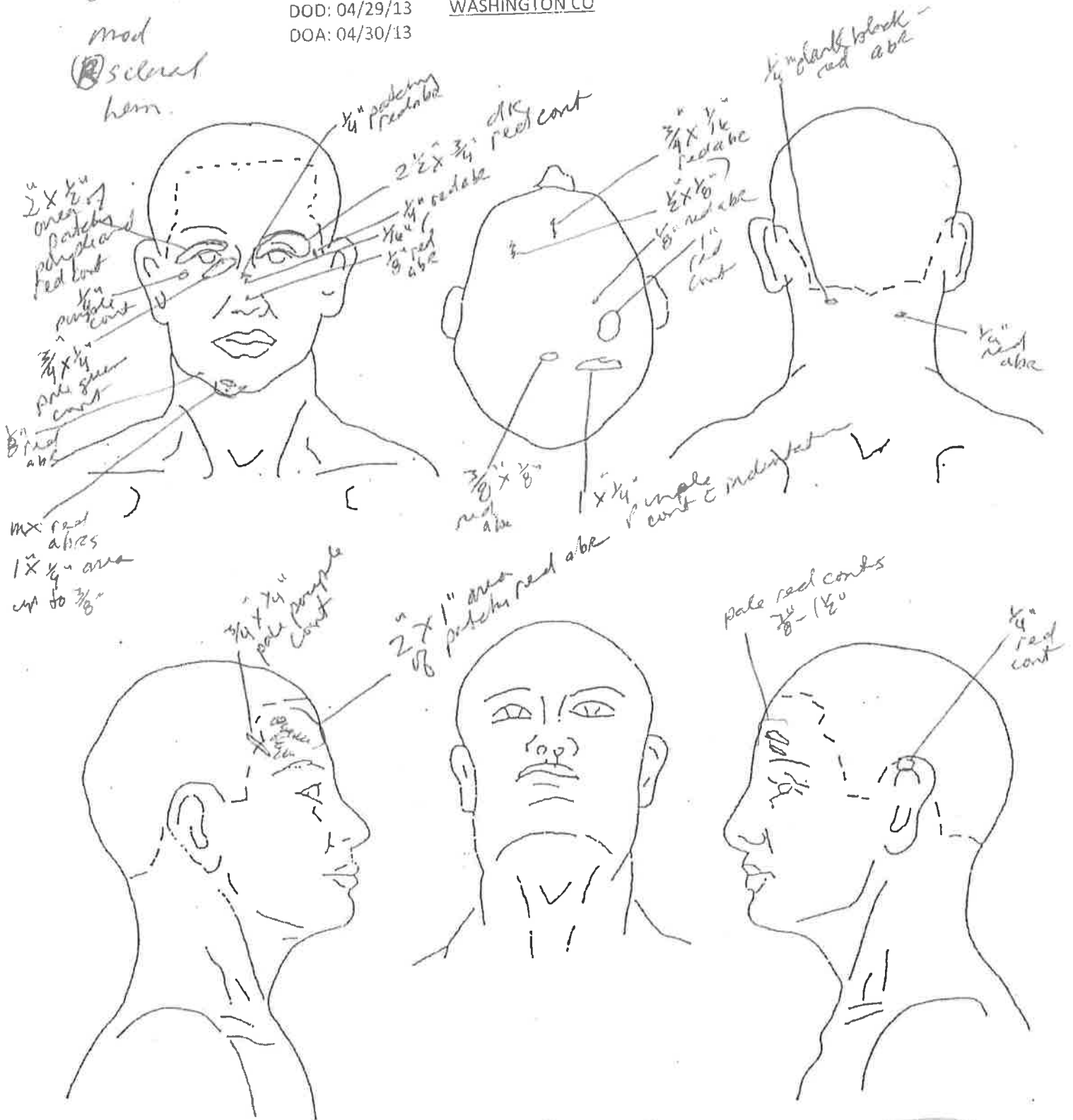
X-rays show:

Signature: [Signature]

Form 22 April 2012

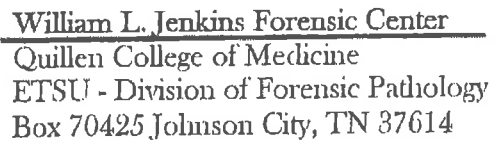
mild @
 lateral hem
 mod
 (B) sclerod
 hem.

FA-13-112 Stewart W. PEPPERS 22 WM
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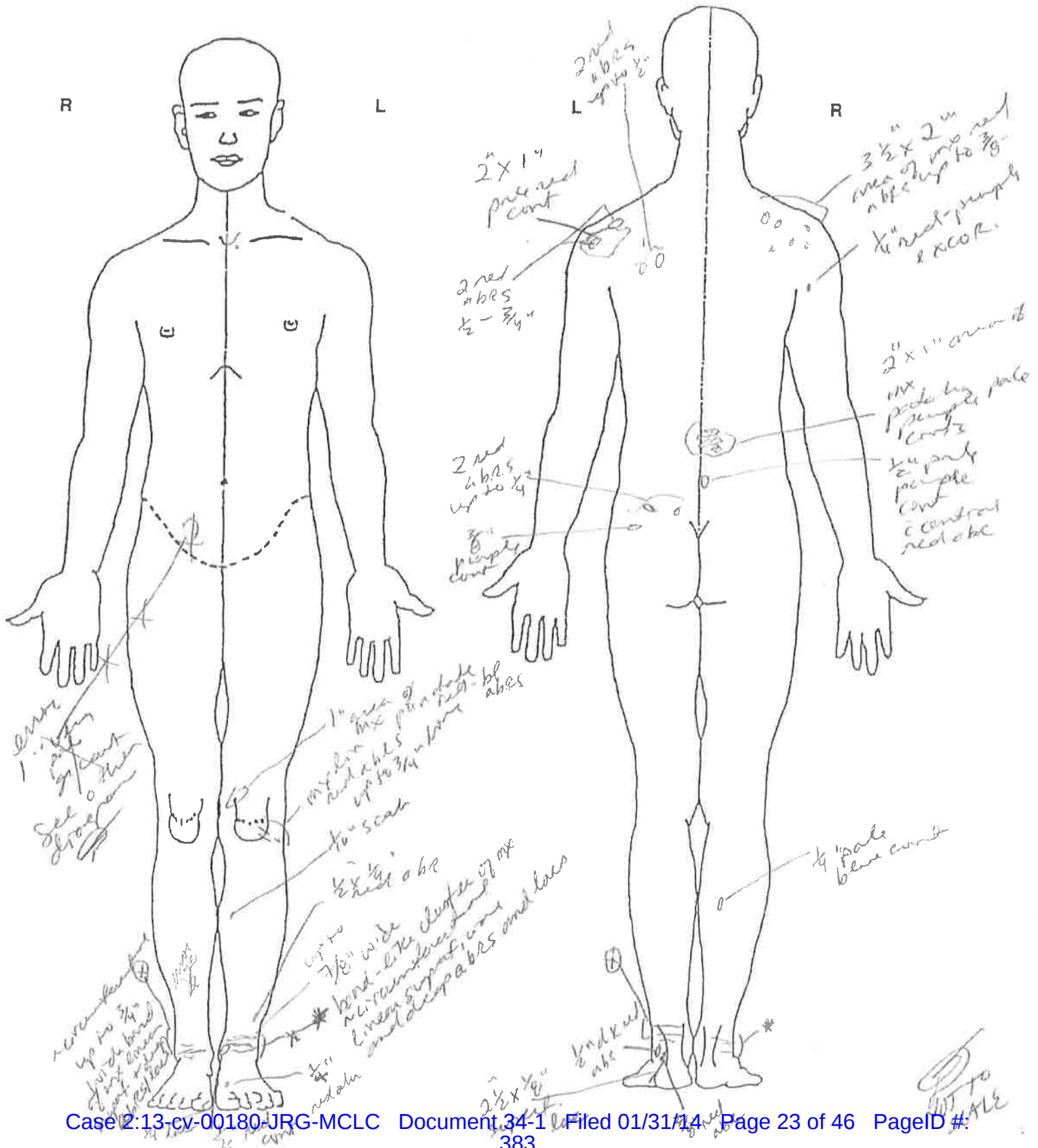


mild-mod hem @ temporalis/subgaleal
 and @ temp
 mod hem @ temporalis, (B) frontal, subgaleal scalp
 patchy moderate posterior (B) scalp hem

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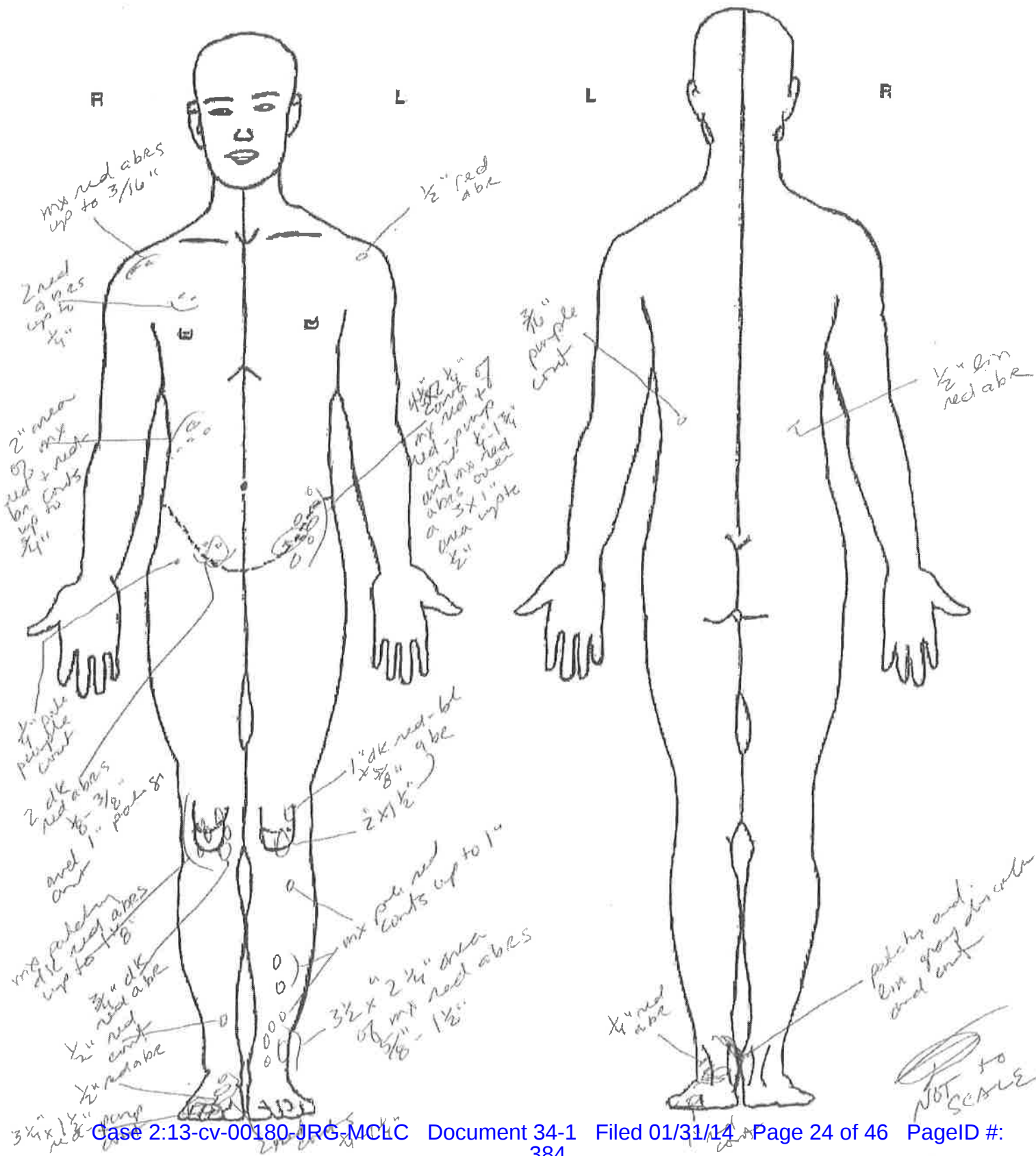
FA-13-112 Stewart W. PEPPERS 22 WM
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BODY DIAGRAM—ARM

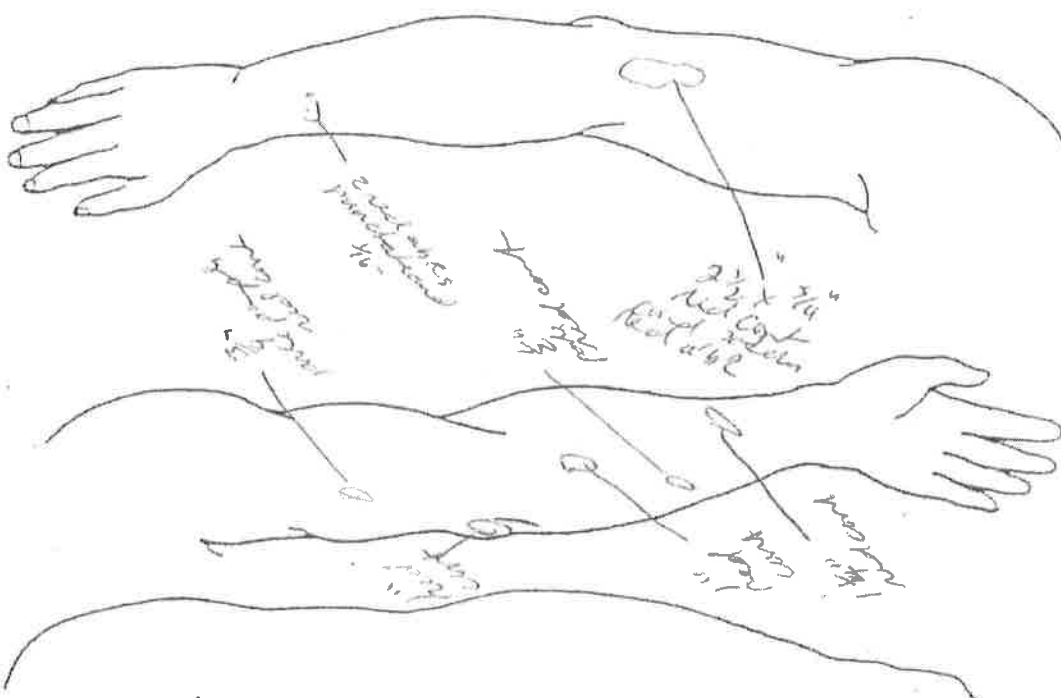
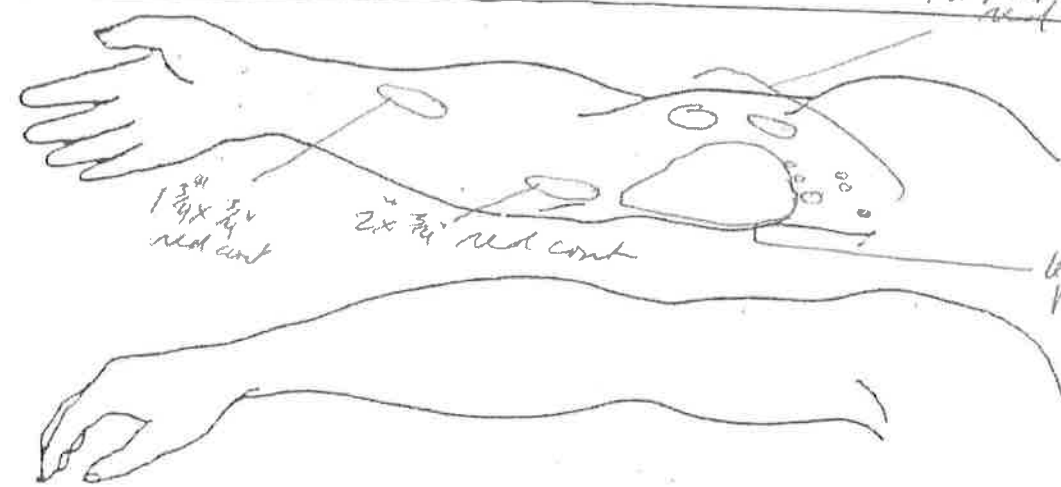
6x5" area of
max purple and
red conts
up to 3/4"

1 3/4 x 3/4
red cont

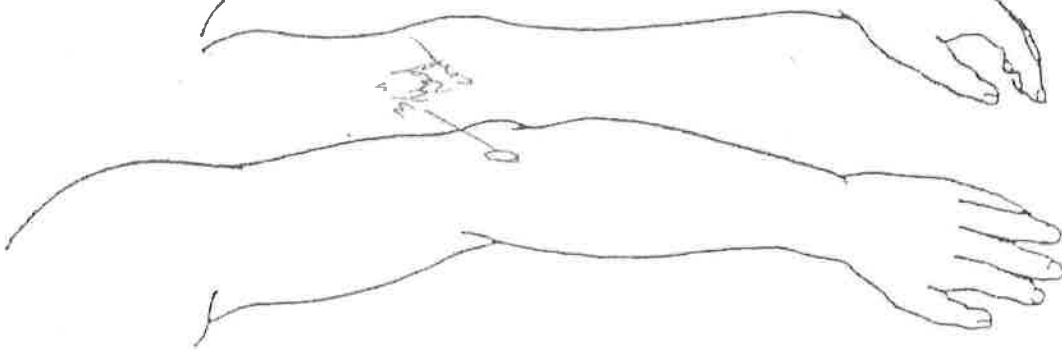
2 x 3/4 red cont

6 x 3 1/2 red and
purple red
cont

RIGHT



LEFT



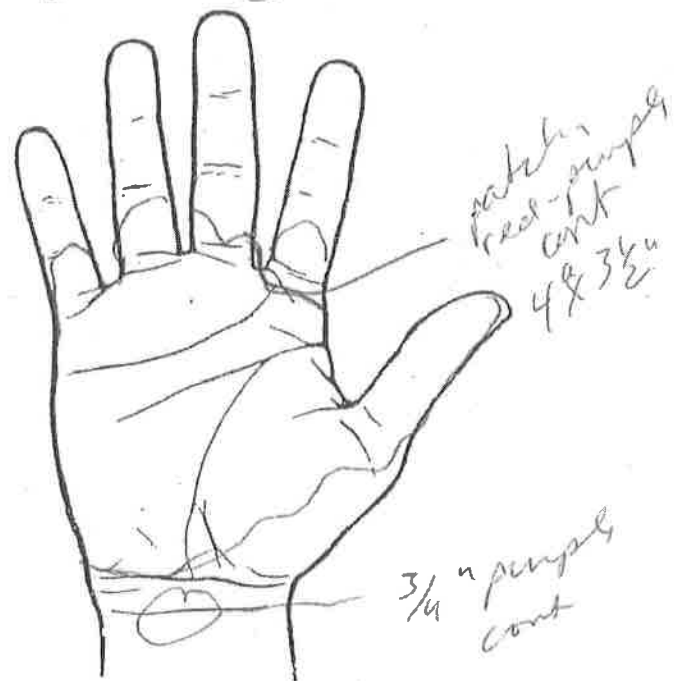
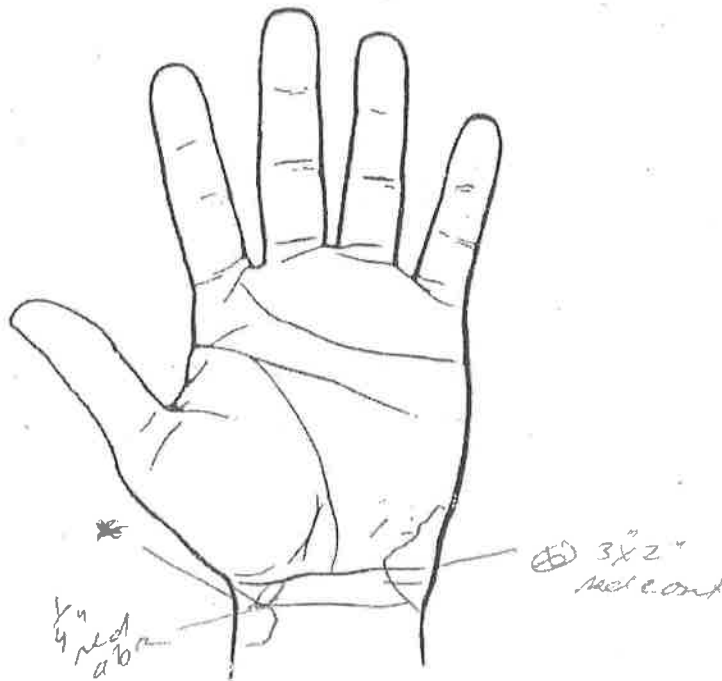
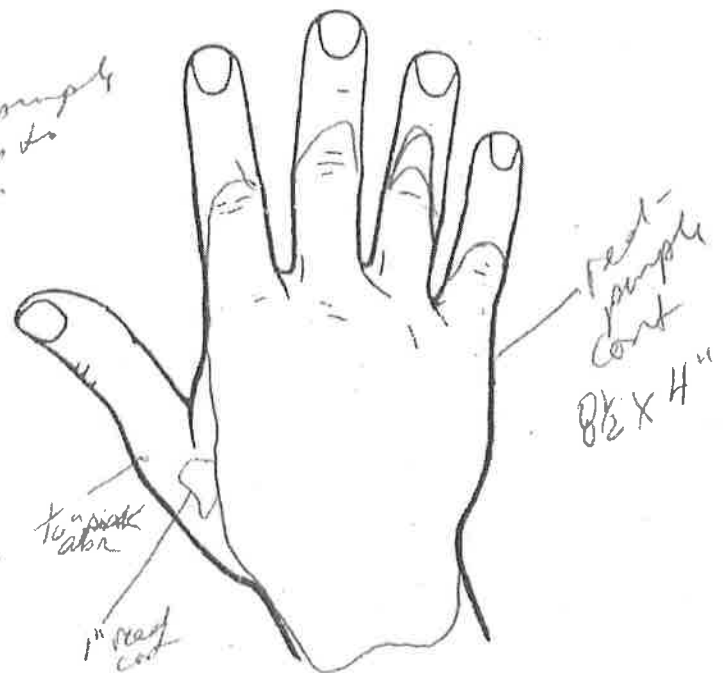
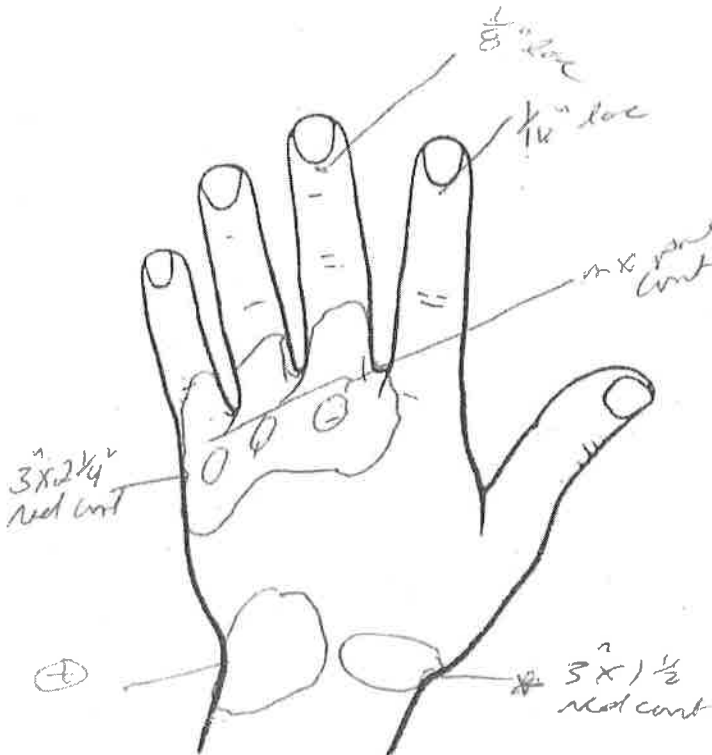
FA-

NAME: _____

FA-13-112 Stewart W. PEPPERS 22 WM
DOD: 04/29/13 WASHINGTON CO
DOA: 04/30/13

LEFT

RIGHT



FA- _____

NAME: _____

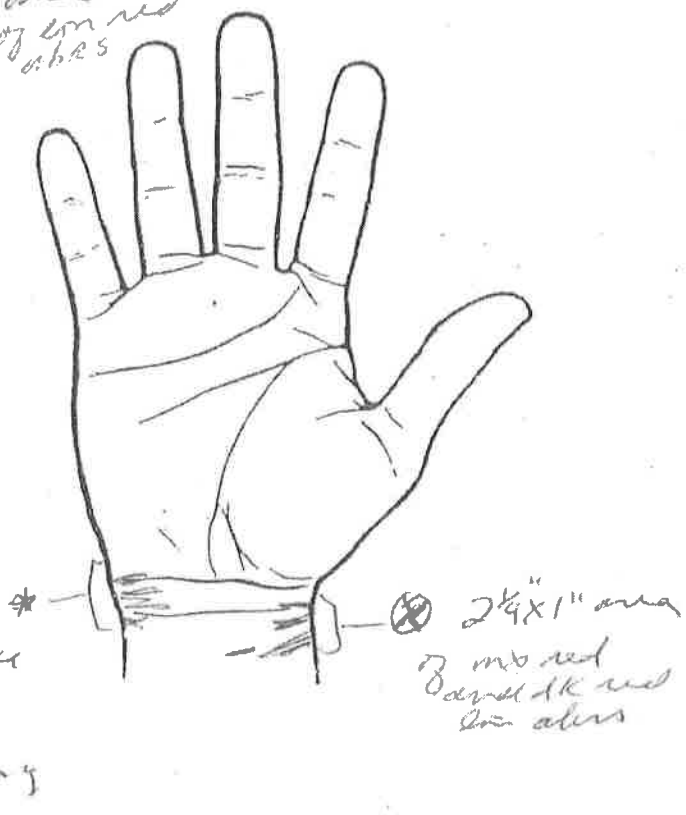
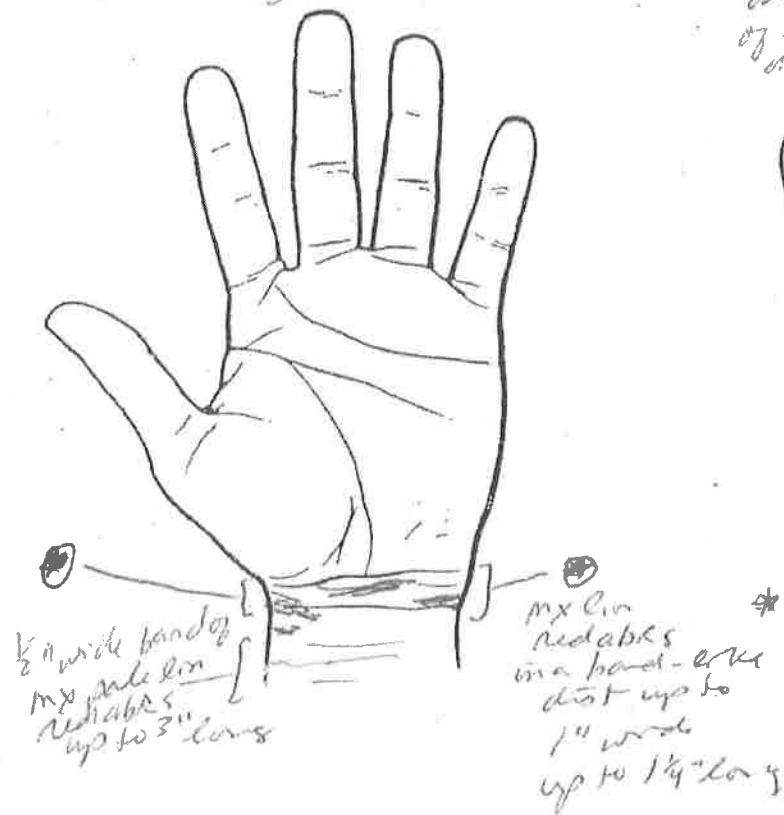
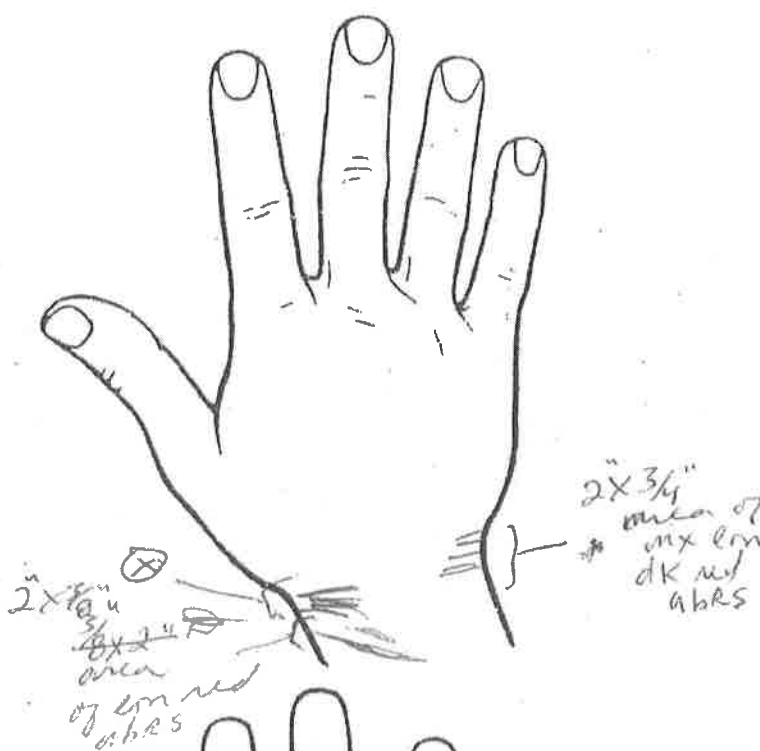
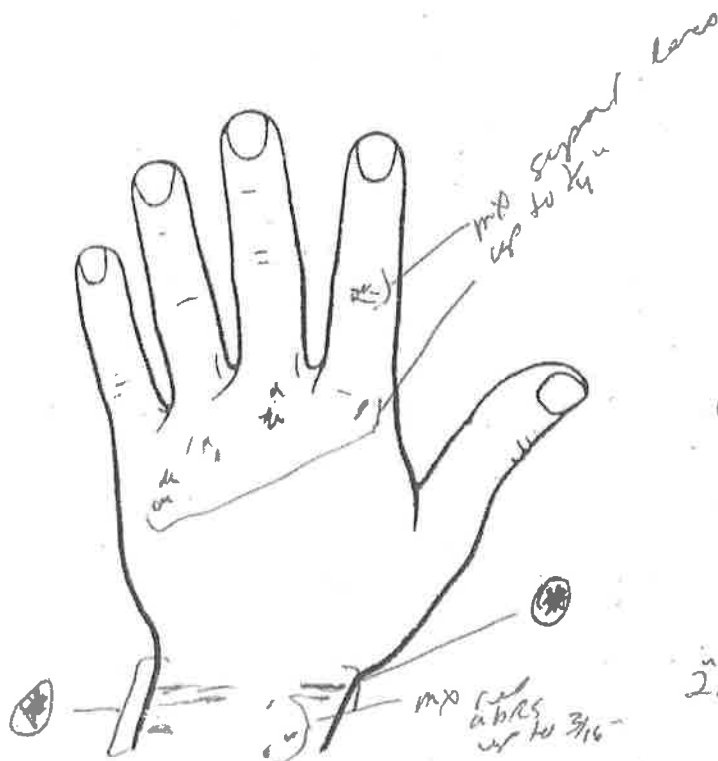
FA-13-112 Stewart W. PEPPERS 22 WM

DOD: 04/29/13 WASHINGTON CO

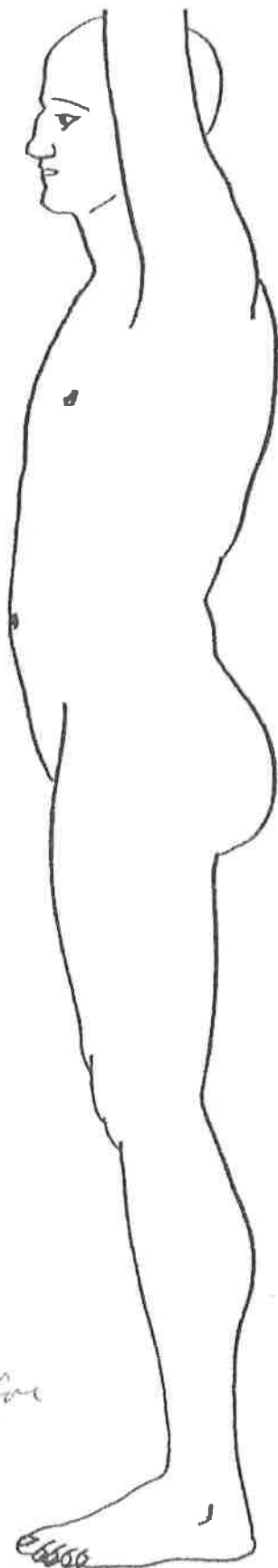
DOA: 04/30/13

LEFT

RIGHT

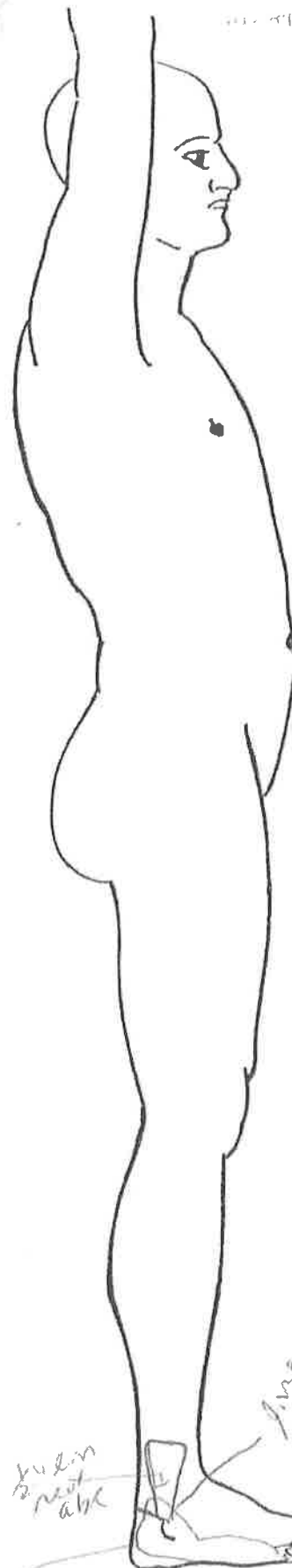


NOT



LEFT

Diagram for
lateral @
foot
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SCALE



RIGHT

4x7+
7 1/4 x 4 1/4
purple
red cord

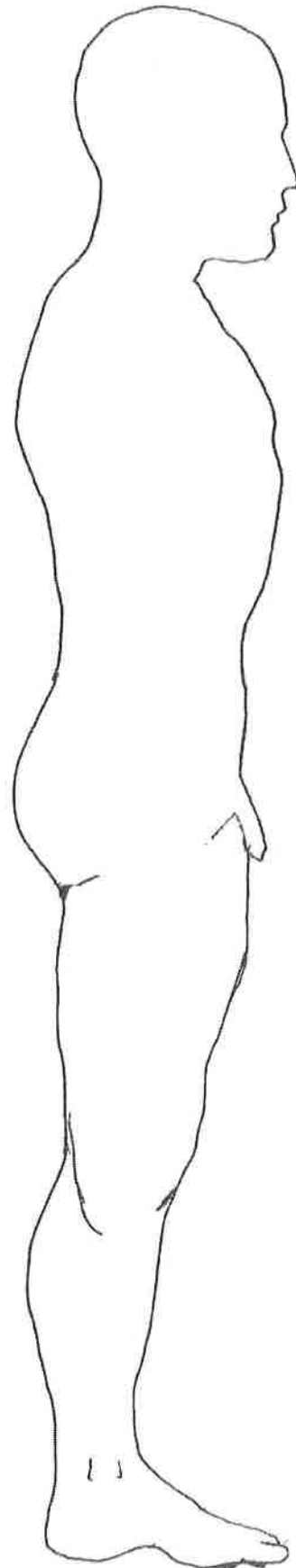
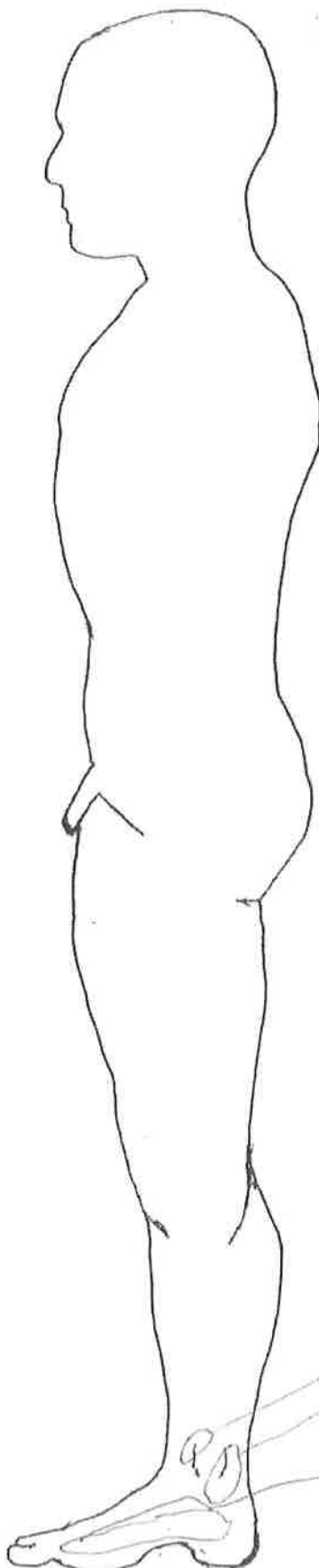
1/2 in
neck
abk

1/2 in
200-210 lbs
5' 10" tall
dark blue

Full body, male, medial view

FA-13-112 Stewart W. PEPPERS 22 VM
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Autopsy No. _____



1 1/4" red cont
2 1/4" x 1 1/4" pale purple
frozen
cont
6 1/2" x 3" area
of simple red
cont

to
NOT
SOME
dissem
for
medial
cont

Feet, left and right plantar surfaces

FA-13-112 Stewart W. PEPPERS 22 WM
DOD: 04/29/13 WASHINGTON CO
DOA: 04/30/13

Autopsy No. _____

Date / /



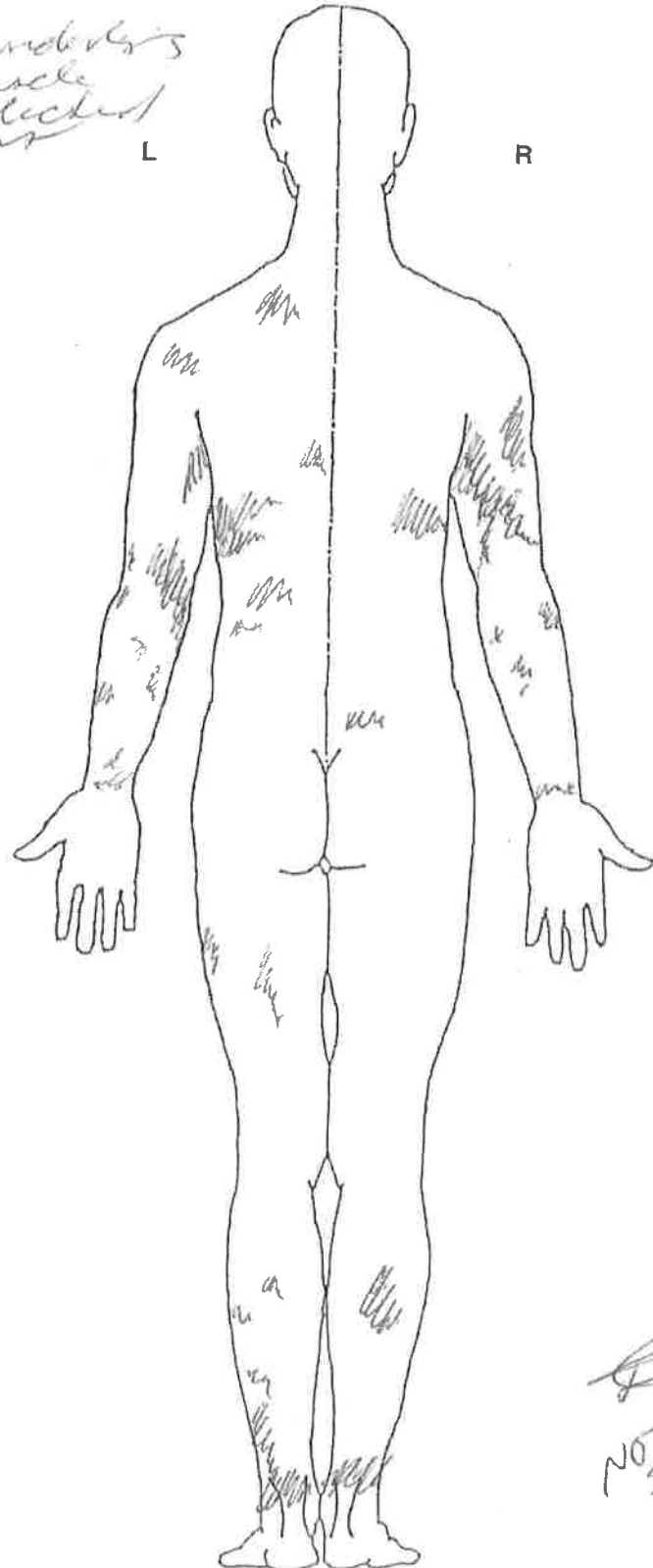
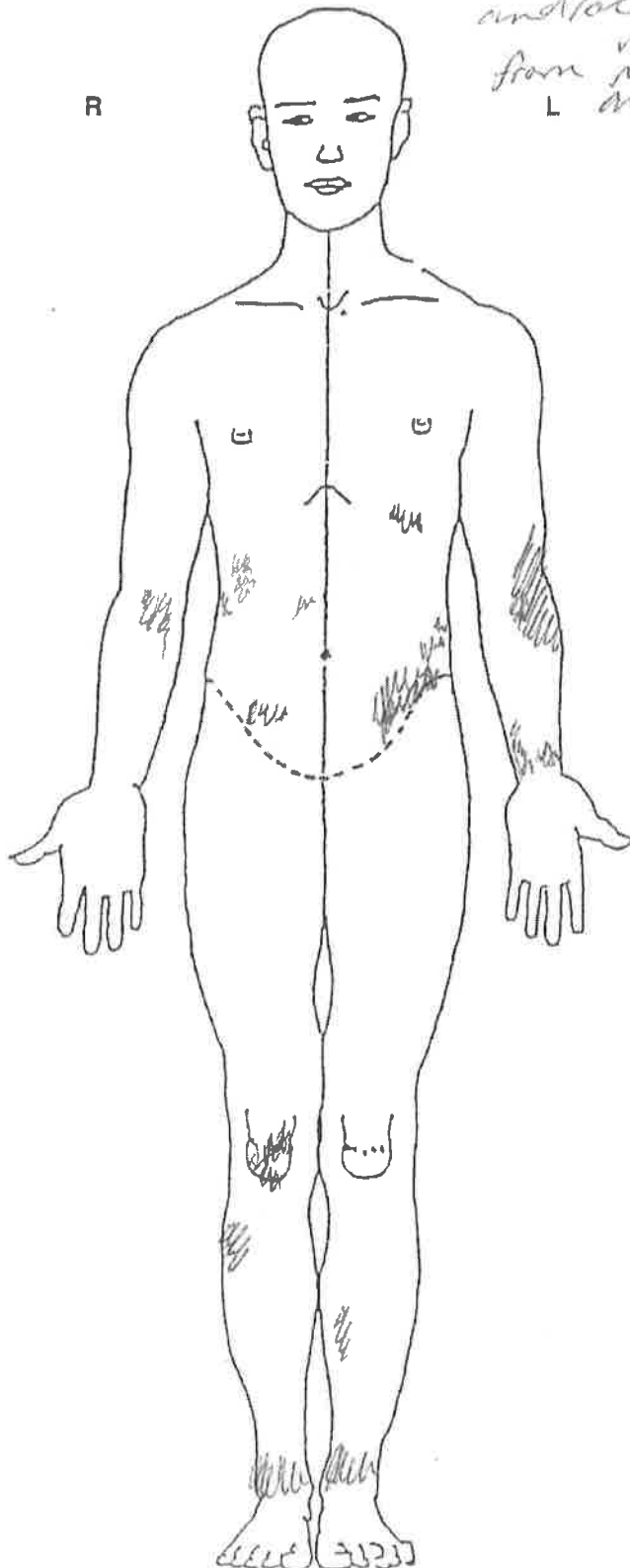
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*Shaded areas are hem
within subQ
and/or underlying
muscle
from reflected
areas*



NOT TO SCALE

LABORATORY REPORT

Bill
☐ PATIENT PEPPERS, STEWARD W.
LAST FIRST INIT.
 ADDRESS AUTOPSY # FA-13-112
CITY STATE ZIP
 SSN: _____ DATE OF BIRTH: 10/8/90



SECTION OF TOXICOLOGY
 DEPARTMENT OF PHARMACOLOGY
 QUILLEN COLLEGE OF MEDICINE
 P.O. BOX 70422
 JOHNSON CITY, TENNESSEE 37614
 (423) 439-6424

Kenneth E. Ferslew, Ph.D., DABFT, Director
 Emily C. Lemieux, MT (ASCP), Supervisor

☐ DIAGNOSIS# _____
☐ MEDICAID: _____
☐ MEDICARE: _____
☐ INSURANCE: _____
NAME

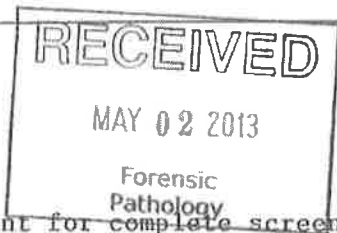
GROUP# ID#
☐ PHYSICIAN/# DR. DAWN LAJOIE, M.D.
 ADDRESS FORENSIC PATHOLOGY
CITY STATE ZIP
☐ HOSPITAL/CLINIC _____
 ADDRESS _____
CITY STATE ZIP
 DRUG HISTORY _____ AGE 22 SEX WM

THIS SPACE FOR LAB USE ONLY	
ACCOUNT NO. _____	SPECIMEN NO. <u>Z-4088</u>
DATE RECEIVED <u>05/02/13</u>	DATE REPORTED <u>05/02/13</u>
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Acetaminophen, serum <input type="checkbox"/> Carbamazepine, serum <input type="checkbox"/> Dilantin (phenytoin), serum <input checked="" type="checkbox"/> Drug Screen, blood/serum <input type="checkbox"/> Drug Screen, gastric/meconium <input checked="" type="checkbox"/> Drug Screen, urine <input checked="" type="checkbox"/> Ethanol, blood, urine <input type="checkbox"/> Ethylene Glycol, blood/serum <input type="checkbox"/> Heavy Metal Screen, urine (antimony, arsenic, bismuth, mercury) <input type="checkbox"/> Nicotine, urine <input type="checkbox"/> Phenobarbital, serum <input type="checkbox"/> Salicylate, serum <input type="checkbox"/> Theophylline, serum <input type="checkbox"/> Tricyclic Antidepressants Screen, serum/urine <input type="checkbox"/> Valproic Acid, serum Volatiles, blood/serum <input checked="" type="checkbox"/> Acetone, vitreous <input type="checkbox"/> Isopropanol <input type="checkbox"/> Methanol <input checked="" type="checkbox"/> Specimen prep for drug analysis <input type="checkbox"/> Specimen collection <input type="checkbox"/> Unidentified procedure <input type="checkbox"/> Other _____ </div> <div style="width: 45%; text-align: right;"> (82003) (80156) (80185) (82661) (82662) (82660) (82055) (82693) (83015) (83887) (80184) (80196) (80198) (80101) (80164) (82010) (84600) (84600) (80103) (99000) (84999) </div> </div>	

Hospital blood DATE/TIME COLLECTED DOA: 04/30/13
 collected 4/29/13 @ 19:30 14:10

SPECIMEN: HOSPITAL BLOOD/URINE/VITREOUS TOXICOLOGY

HOSPITAL BLOOD ETHANOL:	Negative
VITREOUS ACETONE:	Negative
HOSPITAL BLOOD DRUG SCREEN:	Quantity not sufficient for complete screen. No drugs detected Negative: Barbiturates, Benzodiazepines, Cocaine, Methadone, Opiates, Phenytoin, Salicylates, Sympathomimetic amines, Tricyclic antidepressant
URINE DRUG SCREEN:	Cannabinoids



COMMENTS:

[Signature]
 DIRECTOR

Since our initial toxicological analysis on the hospital admission blood collected in this case did not reveal any drugs and the urine collected at autopsy was only positive for cannabinoids, hospital blood was sent to NMS labs for further toxicological analysis.

The only drugs detected in the hospital blood were cannabinoids. The hospital blood contained a delta-9-THC concentration of 1.5 ng/ml and a delta-9-carboxy THC concentration of 5.6 ng/ml. No 11-hydroxy delta-9-THC was found in the femoral blood. THC is the primary psychoactive constituent in marihuana. It is metabolized to 11-hydroxy delta-9-THC (an active metabolite) and then further metabolized to the inactive metabolite delta-9-carboxy THC. Application of the mathematical models of Huestis to these concentrations reveals the probable time intervals in which the subject smoked marihuana. Attached is a sheet with the most probable times that the deceased smoked marihuana with 95% confidence intervals. He most probably smoked 1.42 to 2.26 hours prior to the time of his death with a confidence interval of 0.54 to 4.98 hours (pronounced dead at 1827 and the postmortem peripheral blood specimen collected at 1930 on 04/29/2013). Since he had a measurable concentration of THC in his blood and he smoked most likely within 4 hours of his death, based on the pharmacodynamics of THC, he would have been under the influence of THC from the time of smoking the marihuana to the time of his death.

Due to the history of his erratic behavior other potential drugs were investigated. The hospital blood was also analyzed for the latest expanded panel of bath salts and stimulant designer drugs. This included cathinone, BZP, methcathinone, ethylone, buphedrone, 2C-N, butylone, 2C-H, MBZP, mCPP, pentylone, 2C-C, 3,4-DMMC, 2C-B, TFMPP, 2C-I, DBZP, 2C-T-2, 2C-E, 2C-T-7, naphyrone, 2C-P, MDPV, mephedrone, methylone, methedrone, flephedrone, 3-FMC, 4-MEC, pyrovalerone, amphetamine, methamphetamine, MDA, MDMA, MDEA, DMAA, PMA, DOM, DOB, O-desmethyltramadol, mitragynine, 7-hydroxymitragynine, and phenazepam. None of these compounds were detected with detection limits of 10 to 100 ng/ml.

Synthetic cannabinoids (cannabimimetics) were also investigated. The hospital blood was also analyzed for the latest expanded panel of synthetic cannabinoids. This included AM 694, AM 1248, AM-2201, AM-2233, A-796260, JWH-018, JWH-018 5-chloroethyl, JWH-019, JWH-022, JWH-073, JWH-081, JWH-122, JWH-200, JWH-203, JWH-210, JWH-250, RCS-4, RCS-8, UR-144, and XLR-11 analyzed for at NMS Labs. None of these compounds were detected with detection limits of 0.10 to 0.20 ng/ml.

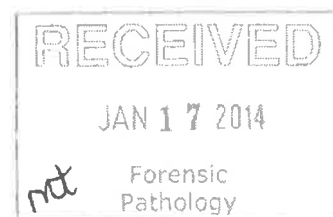
A bottle of clear liquid was submitted to the lab with a label of Red Diamond Pharma, Nandrolone Decanoate, 300 mg/ml. This was found in possession of the deceased. An aliquot was submitted to Aegis Laboratories for a comprehensive steroid analysis. Urine from the deceased was also sent for a comprehensive anabolic profile. The urine specimen was positive for 19-norandrosterone and 19-noretiocholanolone at concentrations greater than 10 ng/ml. These are metabolites of the synthetic steroid nandrolone. The presence of these steroid metabolites confirms the deceased's recent use of nandrolone. The urine was also positive for testosterone at a normalized concentration of 637 ng/ml and epitestosterone at a normalized concentration of 19.7 ng/ml. This produced a testosterone / epitestosterone ratio (T/E ratio) of 32.2. This elevated T/E ratio indicates significant prior administration of exogenous testosterone / androgen by the deceased. Steroid analysis of the clear fluid from the small vial labeled Red

Diamond Pharma, Nandrolone Decanoate, 300 mg/ml, revealed the presence of nandrolone decanoate at an approximate concentration of 172 mg/ml (172,000 ppm). Though this preparation was not at the concentration printed on its label, it was nandrolone decanoate and could be the synthetic steroid used by the deceased.

Though none of the drugs or metabolites detected in this case are at lethal concentrations, the presence of these drugs and/or metabolites indicate prior use of significant drugs by the deceased. The effect of these drugs on the deceased and their impact in determining the cause of death in this case should be considered with other forensic evidence in this case.



Kenneth E. Ferslew, Ph.D., DABFT
Professor
Director of the Section of Toxicology



THC TIME CALCULATIONS

FILE NUMBER:	FA#13-112, Z4088							
	Blood	Plasma	Model I					
THC conc (ng/mL)	1.5	3	0.353969	Time (hr):	2.26	0.343615	0.010355	0.697584
THC-COOH conc (ng/mL)	5.60	11.2		Range:			1.02	4.98
THC-COOH/THC Ratio	3.7	3.7						
			Model II					
			0.151284	Time (hr):	1.42	0.420353	-0.269069	0.571638
				Range:			0.54	3.73

**NMS Labs**

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Robert A. Middleberg, PhD, DABFT, DABCC-TC, Laboratory Director

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06/11/13 1/4

Toxicology Report**Report Issued** 06/07/2013 13:02**30023**ETSU Toxicology
Dr. Ken Ferslew, Toxicology
PO Box 70422
Johnson City, TN 37614**Patient Name** PEPPERS, STEWART**Patient ID** FA-13-112; Z4088**Chain** 11430835**Age** 22 Y**Gender** M**Workorder** 13126121**Received** 05/15/2013 15:30

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded one (1) year from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Sample ID 13126121-001**Matrix** Blood**Patient Name** PEPPERS, STEWART**Patient ID** FA-13-112; Z4088**Container Type** Blue Vial**Collect Dt/Tm** 04/29/2013 19:30**Source** Hospital Blood**Approx Vol/Weight** 8 mL**Receipt Notes** None Entered

Analysis and Comments	Result	Units	Reporting Limit	Notes
8062B Postmortem Toxicology - Expanded w/o Alcohol, Blood (Forensic)				
Analysis by Enzyme-Linked Immunosorbent Assay (ELISA)				
Salicylates	None Detected	mcg/mL	120	
Cannabinoids	See Comment	ng/mL	10	
Comment: Based on this screening result, confirmation testing was performed. Refer to the confirmation test result(s).				
Barbiturates	None Detected	mcg/mL	0.040	
Analysis by High Performance Liquid Chromatography/Time of Flight-Mass Spectrometry (LC/TOF-MS)				
Scope Statement	See Comment			

Results for sample 13126121-001 are continued on next page



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Sample ID 13126121-001

Collect Dt/Tm 04/29/2013 19:30

Matrix Blood

Source Hospital Blood

Patient Name PEPPERS, STEWART

Patient ID FA-13-112; Z4088

Analysis and Comments	Result	Units	Reporting Limit	Notes
Comment: The following is a general list of compound classes included in this screen. The detection of any specific analyte is concentration-dependent. Note, not all known analytes in each specified compound class are included. Some specific analytes outside these classes are also included. For a detailed list of all analytes and reporting limits, please contact NMS Labs. Amphetamines, Anticonvulsants, Antidepressants, Antihistamines, Antipsychotic Agents, Benzodiazepines, CNS Stimulants, Cocaine and Metabolites, Hallucinogens, Hypnotosedatives, Hypoglycemics, Muscle Relaxants, Non Steroidal Anti-Inflammatory Agents, Opiates and Opioids.				

8766B Bath Salts and Stimulants Designer Drugs - Expanded, Blood

Analysis by High Performance Liquid
Chromatography/Time of Flight-Mass Spectrometry
(LC/TOF-MS)

Cathinone	None Detected	ng/mL	10	
Synonym(s): Khat				
BZP	None Detected	ng/mL	10	
Synonym(s): Benzylpiperazine; N-Benzylpiperazine; N-BZP; 1-Benzylpiperazine				
Methcathinone	None Detected	ng/mL	10	
Synonym(s): CAT				
Methylone	None Detected	ng/mL	10	
Synonym(s): 3,4-methylenedioxy-N-methylcathinone; MDMC; bk-MDMA				
Methylone is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.				
3-FMC	None Detected	ng/mL	10	
Synonym(s): 3-fluoromethcathinone				
3-FMC is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.				

Results for sample 13126121-001 are continued on next page



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Sample ID 13126121-001

Matrix Blood

Patient Name PEPPERS, STEWART

Patient ID FA-13-112; Z4088

Collect Dt/Tm 04/29/2013 19:30

Source Hospital Blood

Analysis and Comments	Result	Units	Reporting Limit	Notes
Flephedrone Synonym(s): 4-FMC; 4-Fluoromethcathinone Flephedrone is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.	None Detected	ng/mL	10	
Amphetamine	None Detected	ng/mL	50	
Ethylone Synonym(s): 3,4-methylenedioxy-N-ethylcathinone; bk-MDEA	None Detected	ng/mL	10	
MDA Synonym(s): Adam; 3,4-Methylenedioxyamphetamine; Methylenedioxyamphetamine	None Detected	ng/mL	50	
Methamphetamine Synonym(s): Methamphetamine	None Detected	ng/mL	50	
MDMA Synonym(s): 3,4-Methylenedioxymethamphetamine; Ecstasy	None Detected	ng/mL	10	
Methedrone Synonym(s): 4-methoxymethcathinone; bk-PMMA para-methoxymethcathinone; beta keto para-methoxymethamphetamine; PMMC	None Detected	ng/mL	10	
O-Desmethyltramadol Synonym(s): Tramadol Metabolite	None Detected	ng/mL	100	
Buphedrone Synonym(s): alpha-methylamino-butyrophenone, MABP	None Detected	ng/mL	10	
PMA Synonym(s): para-methoxyamphetamine	None Detected	ng/mL	10	
2C-N Synonym(s): 2-(2,5-dimethoxy-4-nitrophenyl)ethanamine	None Detected	ng/mL	10	
Butylone Synonym(s): bk-MBDB; beta keto-MBDB	None Detected	ng/mL	10	
2C-H Synonym(s): 2,5-dimethoxy-phenethylamine	None Detected	ng/mL	10	

Results for sample 13126121-001 are continued on next page



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Robert A. Middleberg, PhD, DABFT, DABCC-TC, Laboratory Director

Sample ID 13126121-001

Matrix Blood

Patient Name PEPPERS, STEWART

Patient ID FA-13-112; Z4088

Collect Dt/Tm 04/29/2013 19:30

Source Hospital Blood

Analysis and Comments	Result	Units	Reporting Limit	Notes
2C-H is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.				
MDEA	None Detected	ng/mL	100	
Synonym(s): 3,4-methylenedioxyethamphetamine; Methylenedioxyethylamphetamine; Eve				
MBZP	None Detected	ng/mL	10	
Synonym(s): 1-(4-Methylbenzyl)piperazine				
Mephedrone	None Detected	ng/mL	10	
Synonym(s): 4-MMC; 4-methyl-N-methcathinone; 4-methylmethcathinone				
Mephedrone is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.				
DMAA	None Detected	ng/mL	50	
Synonym(s): 1,3-dimethylamylamine; Methylhexanamine; methylpentylamine				
4-MEC	None Detected	ng/mL	10	
Synonym(s): 4-methyl-N-ethylcathinone; 4-methyl-ethcathinone				
mCPP	None Detected	ng/mL	10	
Synonym(s): 1-(3-Chlorophenyl)Piperazine; m-Chlorophenylpiperazine; Trazodone and Nefazodone metabolite; meta-Chlorophenylpiperazine; m-CPP				
Pentylone	None Detected	ng/mL	10	
Synonym(s): bk-MBDP; beta keto MBDP				
2C-C	None Detected	ng/mL	10	
Synonym(s): 4-Chloro-2,5-dimethoxyphenethylamine				
3,4-DMMC	None Detected	ng/mL	10	
Synonym(s): 3,4-dimethylmethcathinone				
MDPV	None Detected	ng/mL	10	
Synonym(s): 1-(1,3-benzodioxol-5-yl)-2-pyrrolidin-1-ylpentan-1-one				
2C-B	None Detected	ng/mL	10	
Synonym(s): 4-Bromo-2,5-Dimethoxyphenethylamine				

Results for sample 13126121-001 are continued on next page

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Robert A. Middleberg, PhD, DABFT, DABCC-TC, Laboratory Director

CONFIDENTIAL**Sample ID** 13126121-001**Matrix** Blood**Patient Name** PEPPERS, STEWART**Patient ID** FA-13-112; Z4088**Collect Dt/Tm** 04/29/2013 19:30**Source** Hospital Blood

Analysis and Comments	Result	Units	Reporting Limit	Notes
7-Hydroxymitragynine Synonym(s): Kratom	None Detected	ng/mL	10	
TFMPP Synonym(s): 3-TFMPP; mTFMPP; 3-Trifluoromethylphenylpiperazine	None Detected	ng/mL	10	
DOM Synonym(s): 2,5-dimethoxy-4-methylamphetamine; DMMA; STP	None Detected	ng/mL	10	
DOB Synonym(s): 4-Bromo-2,5-dimethoxyamphetamine; Brolamphetamine, Bromo-DMA	None Detected	ng/mL	10	
2C-I Synonym(s): 2,5-dimethoxy-4-iodophenethylamine	None Detected	ng/mL	10	
DBZP Synonym(s): 1,4-Dibenzylpiperazine	None Detected	ng/mL	10	
2C-T-2 Synonym(s): 4-ethylthio-2,5-dimethoxyphenethylamine	None Detected	ng/mL	10	
Pyrovalerone Synonym(s): (1-(4-methylphenyl)-2-(1-pyrrolidinyl)pentan-1-one) Pyrovalerone is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.	None Detected	ng/mL	10	
2C-E Synonym(s): 2,5-dimethoxy-4-ethylphenethylamine	None Detected	ng/mL	10	
Mitragynine Synonym(s): Kratom	None Detected	ng/mL	10	
2C-T-7 Synonym(s): 2,5-dimethoxy-4-n-propylthiophenethylamine	None Detected	ng/mL	10	
Naphyrone Synonym(s): naphthylpyrovalerone Naphyrone is known to have limited stability in some individual biological specimens which may be pH related. Negative results should be interpreted with caution.	None Detected	ng/mL	10	

Results for sample 13126121-001 are continued on next page



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Robert A. Middleberg, PhD, DABFT, DABCC-TC, Laboratory Director

Sample ID 13126121-001

Collect Dt/Tm 04/29/2013 19:30

Matrix Blood

Source Hospital Blood

Patient Name PEPPERS, STEWART

Patient ID FA-13-112; Z4088

Analysis and Comments	Result	Units	Reporting Limit	Notes
2C-P	None Detected	ng/mL	10	
Synonym(s): 2,5-dimethoxy-4-propylphenethylamine				
Phenazepam	None Detected	ng/mL	10	
Synonym(s): 7-Bromo-5-(2-chlorophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-one				

9560B Synthetic Cannabinoids Screen, Blood (Forensic)

Analysis by High Performance Liquid Chromatography/Tandem Mass Spectrometry (LC-MS/MS)

AM-2233	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-200	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
AM-1248	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
AM-694	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
A-796260	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Yucatan Fire; Spike; Synthetic Cannabinoids; Spice				
AM-2201	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
RCS-4	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-018 5-chloropentyl	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				

Results for sample 13126121-001 are continued on next page



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Sample ID 13126121-001

Matrix Blood

Patient Name PEPPERS, STEWART

Patient ID FA-13-112; Z4088

Collect Dt/Tm 04/29/2013 19:30

Source Hospital Blood

Analysis and Comments	Result	Units	Reporting Limit	Notes
XLR-11	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-022	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-073	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-250	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-203	None Detected	ng/mL	0.20	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-018	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-081	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-122	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-019	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
UR-144	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
RCS-8	None Detected	ng/mL	0.10	
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
JWH-210	None Detected	ng/mL	0.10	

Results for sample 13126121-001 are continued on next page



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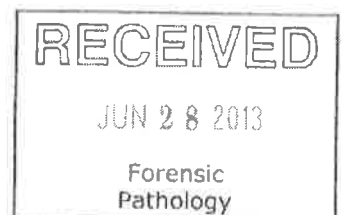
Sample ID 13126121-001
Matrix Blood
Patient Name PEPPERS, STEWART
Patient ID FA-13-112; Z4088

Collect Dt/Tm 04/29/2013 19:30
Source Hospital Blood

Analysis and Comments	Result	Units	Reporting Limit	Notes
Synonym(s): K2; Space; Spice; Spike; Synthetic Cannabinoids; Yucatan Fire				
50013B Cannabinoids Confirmation, Blood (Forensic)				
Analysis by Multi-dimensional Gas Chromatography/Mass Spectrometry (GC-GC-MS)				
Delta-9 THC	1.5	ng/mL	1.0	
Synonym(s): Active Ingredient of Marijuana				
The concentrations in Blood are usually about one-half of Serum/Plasma concentrations. Usual peak levels in Serum for 1.75% or 3.55% THC marijuana cigarettes: 50 - 270 ng/mL at 6 to 9 minutes after beginning smoking, decreasing to less than 5 ng/mL by 2 hours. Passive inhalation: Up to 2 ng/mL.				
Delta-9 Carboxy THC	5.6	ng/mL	5.0	
Synonym(s): Inactive Metabolite				
Usual peak levels in Serum for 1.75% or 3.55% THC marijuana cigarettes: 10 - 101 ng/mL about 32 to 240 minutes after beginning smoking, with a slow decline. Usually not detectable after passive inhalation.				
11-Hydroxy Delta-9 THC	None Detected	ng/mL	5.0	
Synonym(s): Active Metabolite				
Usual peak levels: Less than 10% of THC levels after smoking.				

Workorder 13126121 was electronically signed on 06/07/2013 12:55 by:

Daniel S. Isenschmid, Ph.D., D-ABFT
Forensic Toxicologist



Name: PEPPERS, STEWART

ME Code # FA-13-112

Um Case: HCCUF

Date of Death: 4/29/2013

Sex: Male

Race: White

Age: 22 yrs

Consultant:

Deborah C. Mash, Ph.D.
Depts. Neurology and Molecular and Cellular Pharmacology
Miller School of Medicine at the University of Miami

Incident narrative summary: Report of a 22 year old, white male witnessed to become unresponsive while in restraints following an altercation with police officers on April 29, 2013. The victim was placed on a cardiac monitor, which showed asystole. Upon arrival to the emergency department by EMS, he was in PEA. A core body temperature was not reported. There is no prior history of mental health issues. Blood toxicology was positive for cannabinoids.

Neurochemical Pathology Examination: Coronal brain sections taken from the level of the caudate nucleus and putamen were submitted for neurochemical analysis as described previously (Mash et al., 2009). Regions-of-interest were dissected from the frozen specimen for neurochemical measures of the dopamine transporter (DAT) and heat shock protein 70 (HSPA1B) induction as a biomarker of hyperthermia. RNA was isolated from the temporal cortex (Brodmann area 22). The brain pH was 6.0 and the RNA integrity (RIN) values were 6.3 and 7.7. These results are indicators of the high quality of the brain specimens submitted for analysis.

Neuropathology: Moderate to severe brain ischemic encephalopathy (Dept. Pathology, Rhode Island Hospital, Edward Stopa, MD Pathology consult).

Biomarker Analyses: A neurochemical analysis of the number of dopamine transporters was completed on this case. The density and affinity binding parameters were assayed within the ventromedial putamen using a selective radioligand and a validated neurochemical assay. Reference specimens were included in the assays for direct comparison to normalized values determined for control subjects and victims of excited delirium (Figure 1; left panel).

The analysis of the dopamine transporter assay demonstrated that ME case # FA-13-112 had lower numbers of radiolabeled WIN 35,428 binding sites (Figure 1B) as compared to age-matched and drug-free control subjects. This result is in good agreement with results shown in left panel (Figure 1A) for cases of excited delirium (Mash et al., 2002; 2009). This finding demonstrates that there were reduced numbers of dopamine transporters compared to an age-matched control subject. The density of sites is comparable to the values shown in the left panel (open triangles) for agitated subjects that died suddenly.

We have demonstrated that there is a defect in the regulation of the dopamine transporter in victims of excited delirium who die suddenly in police custody (Staley et al., 1994; 1995b; Wetli et al., 1996; Mash et al., 2002; 2009). Decreased numbers of dopamine transporters (DAT) at brain autopsy suggest that there is defective dopamine signaling in brain. The loss of dopamine transport function in excited delirium cases leads to pathologically high extracellular dopamine levels. The hyperdopaminergic state contributes to the psychotic behaviors and hyperthermia associated with the excited delirium syndrome (Staley et al, 1995; Mash et al, 2002; 2009).



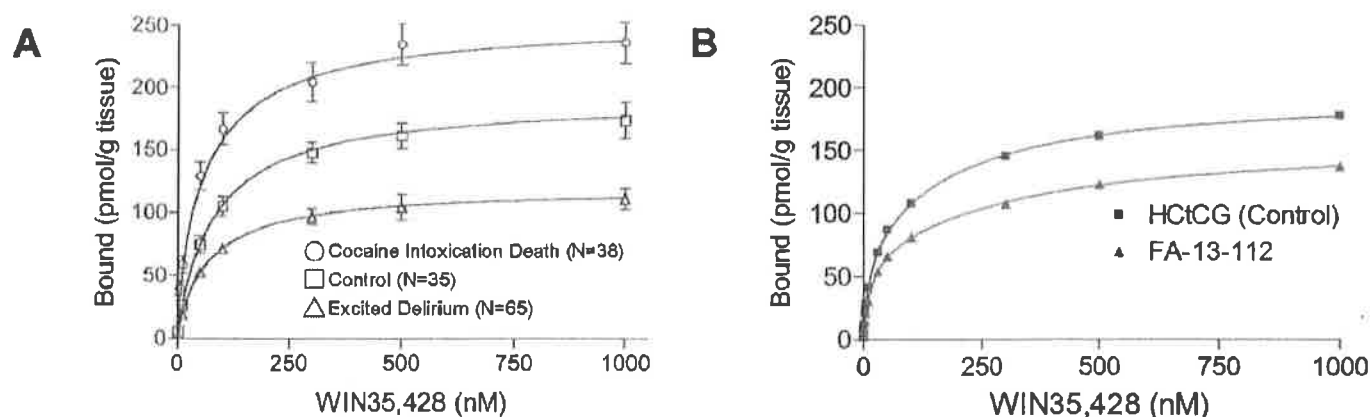


Figure 1: Equilibrium Saturation Binding of $[^3\text{H}]$ WIN35,428. (A) Dopamine transporter reference values for cocaine intoxication deaths, age-matched drug-free controls and excited delirium cases for comparison (Mash et al., 2009). (B) The analytical results for ME # FA-13-112 as compared to an aged-matched control assayed in parallel (right panel).

Heat shock protein (HSPA1B) expression demonstrated an approximately 4-fold increase above control values, consistent with an elevated core body temperature. Heat shock protein induction occurs in response to elevated temperatures, serving as a biomarker of this condition. The Table shown below illustrates the results obtained for this case. Brain specimens were assayed twice and the reported values are shown.

Table 1. Heat Shock mRNA (HSPA1B gene)

Subject/Cohort	Fold-Change Range (ExDS vs. Controls)
Case #FA-13-112	3.4 and 4.7
Excited Delirium (range; n=60)	1.8 - 6.0
Reference Normal (range; n=50)*	0.9 - 1.0

* Drug-free age-matched controls; ExDS, excited delirium syndrome

Excited Delirium Syndrome (ExDS) is a condition that manifests as a combination of psychomotor agitation, anxiety, hallucinations, speech disturbances, disorientation, violent and bizarre behavior, insensitivity to pain, elevated body temperature, and increased strength. This disorder most frequently occurs in male subjects with a history of psychostimulant abuse. ExDS is often seen in persons with a large BMI. **Case #FA-13-112** was evaluated using a two-panel biomarker analysis to detect central dopamine (DA) dysregulation and heat shock protein 70 induction. The dopamine transporter (DAT) levels were decreased and heat shock protein 70 was elevated compared to reference control values. These values are in close agreement with ExDS cases that have been evaluated in a laboratory series (Mash et al., 2009). The decedent had a BMI of 30.6. The ExDS checklist of signs and symptoms shows 13 out of 22 criteria identified from the witness narratives. A psychological autopsy may help to rule out a contributing history of substance abuse or undiagnosed bipolar disorder. A withdrawal syndrome from licit or illicit medications may precipitate a state of delirium and autonomic instability in vulnerable individuals. When considered together with the circumstances prior to death, the results of the biomarker analysis supports the assignment of ExDS for this case.

References

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